AMERICAN
JOURNAL OF SURGERY

VOL. XXII. MARCH, 1908. No. 3.

THE SIGNIFICANCE OF ABDOMINAL TENDERNESS IN LOCATING LESIONS OF VISCERA.*

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The term "tenderness" is here used in its broadest sense, signifying an abnormal sensibility to touch and may be defined in one instance as hypersensitiveness and in another as actual painfulness. Since the examiner awakens this tenderness through touch, and as it is usually accompanied by such objective symptoms as local muscle spasm, movements of the body, facial expressions of discomfort, heightened pulse, dilatation of pupils, etc., it should, itself, be spoken of as an objective symptom. Subjective pain, while frequently associated with tenderness, is not, by any means, always coincident with it, either in time or location.

In a certain per cent. of visceral lesions, tenderness is present; particularly is this true of the abdominal viscera. This symptom is always sought, especially when pain is complained of, and to a large extent it is relied upon in locating the seat of disease. No attempt will be made to show that it is pathognomonic of certain lesions, though the character of the tenderness may help materially in making a diagnosis. The location of the tenderness, because of the variations in the relative position of some of the viscera, the juxtaposition of certain frequently involved organs and the variable degree of fulness of the abdomen, is somewhat untrustworthy at times.

The question of locating a lesion of an abdominal viscus, which is accompanied by pain, has in recent years awakened, in the study of medicine, considerable interest. At first thought it seems but natural that a diseased organ should suffer pain at the seat of lesion, but of late this has been seriously questioned, and by some absolutely denied. In Hilton's classic little book, "Rest and Pain," attention is directed to the fact that pain is often felt in an area of peripheral nerve distribution though the lesion be deep seated. Reasoning from clinical data he ascribes this to the fact that certain peripheral nerves have a source of origin from the spinal cord common with fibers which supply the internal organs.

Gaskell undertook to demonstrate this association anatomically and published his results in *The Journal of Physiology*, Vol. 7, 1886. The medulated and non-medulated nerves of the sympathetic system were traced to and from the cord and a scheme given of their distribution to the visceral and vascular systems. He largely dealt, however, with their inhibitory and motor function. Edgeworth published in the same journal a later article confirming Gaskell's results. In 1893, Mackenzie published a paper in *Brain* in which he contended that the pain felt in diseases of the viscera is a referred sensation being manifested in certain peripheral nerve branches having a common origin from central spinal segments with those nerves which supply the viscera. He argued that the viscera have no sensory nerve fibers to conduct pain. Very recently, in *The British Medical Journal*, Vol. I, 1906, he reiterates his former views and endeavors to show that the tenderness seemingly located in a viscus is, in fact, awakened in the muscle and connective tissue overlying the viscus. Ross, in a paper entitled "Segmental Distribution of the Sensory Disorders," which appeared in *Brain*, Vol. 10, 1888, presented views which coincide with those of Mackenzie except that he does not insist upon the impossibility of visceral sensibility. Maylard, in his book upon "Abdominal Pain," quoting from a paper by Head on "Disturbances of Sensation with Special Reference to the Pain of Visceral Disease" (*Brain*, Vol. 16, 1893) gives the following, indicating the lines upon which he worked:—"Pain was, in many cases, associated with definite cutaneous tenderness. Moreover, the cutaneous tenderness was, in many cases, not confined to small spots or areas, but occupied whole tracts of skin with definite borders. I was thus led to investigate the pain and accompanying tenderness consequent on disturbances of other organs, and I found that these sensory disturbances also followed definite lines. After Ross' most suggestive papers, it seemed exceedingly possible that these areas bore some definite relation to nerve

* Read before the Western Surgical and Gynecological Association, December 31, 1907.

distribution, and I then began to investigate the distribution of herpes zoster in the hope that a skin lesion which was notoriously of nervous origin might throw some light on the meaning and significance of the tender areas in visceral disease. To my surprise, I found that the areas occupied by herpes zoster exactly corresponded to those with which I was familiar in visceral disease. I next attempted to determine to what level of the nervous system these areas belonged, with the help of cases in which gross organic lesions were present. By this means, it became apparent that each of these areas represented the distribution of a single segment in the spinal cord. Thus I was enabled to map out the areas supplied by the various segments of the cord on the surface of the body. It then became apparent that certain of these areas were never affected in visceral disease, and this led me to examine the sensory supply of the viscera from the sympathetic system. Now, Ross had already suggested that in visceral disturbances, pain (and therefore tenderness in my cases) was referred along the distribution of the somatic nerves which came off from the same part of the cord as the sensory sympathetic fibers to the organ affected. Thus, if I could map out the somatic areas along which pain was referred in visceral disease, I could say, on Ross's hypothesis, what was the sensory supply from the sympathetic of the particuar organ affected. By this means, I obtained another scheme, showing the distribution of the sensory sympathetic fibers analogous to that which Gaskell constructed for the motor and inhibitory fibers of the same system." In this scheme of Head's, the areas of cutaneous tenderness do not overlap and there are usually two points at which the greatest sensibility is noted, one antero-lateral and the other postero-lateral, the so-called Nodes of Valle.

In recent times the Swedish surgeon, Lennander, has attempted to prove the insensibility of the abdominal organs. He made use of Schleich's solutions to open the abdomen, and demonstrate the insensitiveness of the viscera to handling and to various stimulants. He found only the parietal peritoneum and mesenteries painful to irritation, but in those structures heat, pressure and cold sense was lacking. The organs were cut and handled without pain. The impression of pain in the abdomen according to his views ascend over the two phrenics, the six power dorsal, the lumbar, and sacral nerves, none of which supply the organs of the abdomen.

Unlike some of his predecessors, his explanation of how the somatic fibers are awakened into painful transmissions is not by assuming the origin of visceral and somatic nerve fibers from the same segment of the spinal cord but by direct transmission of irritating substances from the visceral lesion through the lymph channels to the somatic or mesenteric fibers, or by a direct mechanical irritation of these fibers.

In the *Medical Record* of December 29, 1906, L. Kast and S. J. Meltzer take issue with Lennander. They apparently demonstrate that the use of cocain induces this visceral insensibility. Dogs were laparotomized under the influence of the anesthetic. If then the viscera were handled, clear evidence of pain was given. If on the other hand, cocain was injected, this evidence of pain disappeared. The experimenters, reasoning upon this evidence, assert that the abdominal organs do possess sensory nerve filaments which are put out of function by cocain.

To those familiar with operative work upon the abdominal viscera under the influence of local anesthetics, the lack of acute sensibility of the organs is well known. I have repeatedly cut, caught with forceps and sewed the various organs without awakening pain or noticeable discomfort. The important consideration in this local anesthetic work was, to me, the necessity of infiltrating the parietal peritoneum in the neighborhood of the wound to lessen painful contact, and the necessity of avoiding traction upon the organs handled or operated upon.

The objections which I should offer to the deductions of Kast and Meltzer are:—1st. There is no valid reason why the nerves of pain-conduction in the splanchnic system should materially differ, chemically, from those of the somatic tracts. This being so, there can be no reason why a very minute dose of cocain should block impulses over the one set and not over the other set of nerves when not applied directly to either of them. 2nd. The use of alypin, eucain and even water, in my experience, has been efficient in bringing about the same results as that obtained by cocain. 3rd. In several instances have operated upon the gall-bladder and upon the bowels without any anesthetic and caused no acute pain. Thirteen years ago I had my first opportunity to demonstrate this possibility in a patient upon whom I had done a left inguinal colostomy because of a vesico-recto-cutaneous fistula. I discovered, after the operation, that the spur had not been made long enough to prevent some liquid matter of the bowels from going on into the distal gut. To overcome this, I divided the mucosa and submucosa of the opened bowel and completely closed the distal portion. The

patient assured me it did not cause great discomfort. I have twice since, opened the gall-bladder hours after exposing the viscus and in neither case did the cut cause pain.

I think it is generally accepted by surgeons that the viscera do normally possess sensibility in moderate degree. This sensibility is poorly developed in them, when contrasted with that possessed by the peripheral tissues. Under the influence of disease or irritation, this very moderate capacity of the viscera to suffer pain increases to a marked degree. I have seen in a patient, during an operation, apparent insensibility followed by acute suffering. The patient was starving to death from an esophageal obstruction, supposedly cancerous. I performed a Kader gastrostomy under a local anesthetic. The first part of the operation was carried out without signs of discomfort, the abdomen was opened, the stomach picked up and incised, a rubber tube inserted and the first stitch taken, seemingly without pain. The second row of invaginating stitches in the stomach wall caused very considerable pain. The same portions of the stomach wall which had just previously been caught with the forceps without discomfort, began to evidence this marked sensibility to the stick of the needle. I, at first, thought the pain was of purely psychic orgin but found that the patient, who was not able to see what was happening, complained of each introduction of the needle. It might be argued as the result of Kast's and Meltzer's experiments, that the effect of the anesthetic had worn off and pain was the consequence. This I do not believe as the time between the periods of complete comfort and suffering was too short. On the other hand, I believe that the continued irritation of handling the stomach awakened this heightened sensibility. The fact is, congestion, and especially inflammation, will accentuate irritability in all tissues, as for example, witness the intolerance of an inflamed gum to the touch. I have observed a number of times that celerity and careful handling had much to do with the painlessness of an abdominal operation under local anesthesia. Whenever, for one reason or another, time is consumed in the work and much handling has to be done, the patient invariably becomes restless and complains of discomfort. If this factor, "time," be explained by the experiments of Kast and Meltzer, then we would have a remedy most valuable in colics, stomach ulcers and visceral lesions of all kinds producing pain. A small injection of cocain in non-toxic amount would serve to relieve every pain of visceral origin. Such is, as we know, not the case. I am confident, after a very considerable amount of work on the abdominal viscera under local anesthesia, that the increased sensibility of the abdominal viscera of the dogs laparotomized by Kast and Meltzer, and awakened from the anesthetic before attempting to produce pain by handling, was due to heightened sensibility, the result of exposure of the viscera, and most possibly to irritation of the parietal peritoneum and wall during the handling.

One thing is definitely certain, visceral lesions do cause pain at times. Now if the viscera have no nerves of sensibility, as insisted upon by Mackenzie and by Lennander, how can a purely visceral lesion give rise to pain? The viscera evidently do possess nerves for afferent conduction. Naturally, the question is raised, do these afferent fibers conform to the type of the pure pain-conducting fibers of the rest of the body or are they of different type, awakening only painful impulses in the cord? This reminds me very much of the question asked by a philosophic schoolgirl in class upon one occasion. She desired to know whether Homer really wrote the works of Homer or whether they were written by another man by the name of Homer.

The question of pain being located in a viscus and referred specifically to its seat, and the further question of pain being referred to certain somatic nerve areas, is different from that discussed above. The anatomy of the visceral nerve supply would at once indicate the reason for the difficulty experienced in locating pain which takes origin from a viscus. The distributory function of the ganglia brings into close association the various organs, and impulses might readily be interpreted as coming from one viscus or several. It seems reasonable, however, that pain, coming from a viscus, should reach the sensorium over tracts which enable the individual to become conscious, in a general way, of its location. It must, furthermore, be stated that there is no proof that all afferent nerve fibers have functional nerve contact with the sympathetic ganglia cells. Some may pass directly to the cord and carry impulses which enable the individual to locate the source of disturbance.

A most interesting phenomenon in connection with visceral lesions is the pain and tenderness observed in somatic areas, or visceral lesions accompanied by pain show a marked tendency to awaken irritability along certain somatic nerve routes. This is the referred pain to which Hilton, Gaskell, Edgeworth, Ross, Head, Thorburn, Mackenzie, Lennander and others have directed attention. All of these writers have shown that visceral disturbances refer pain in part (and some insist,

altogether) to areas of distribution of sensory somatic nerve fibers, which fibers, as a rule, take origin from the same spinal segments as the visceral fibers.

While it may, in part, be explanatory to refer pain of visceral origin in somatic areas to the common origin of the splanchnic and somatic nerves from the same spinal segments, yet this is not fully explantory. In fact, it does not explain those pains in somatic areas, the nerves supplying which take origin from entirely different segments of the cord from those supplying the viscera at fault. It is a common observation that pelvic disease may manifest pain in the intercostal nerve areas, and vice-versa, pneumonia may be mistaken for peritonitis or appendicitis. Another interesting observation is that of a crossed sensation in which the somatic response is upon the opposite side from the affected viscus.

The most reasonable explanation of co-sensation is the close association of afferent nerve tracts in the cord. Whether we ascribe nerve conduction, from the periphery to the brain, to the association of neurons, either by the neuroglia movement of Ramon y Cajal or to the neurons themselves moving, it matters little; one thing seems reasonable, that is, an often repeated action is more easily accomplished by the group of cells accustomed to that certain action than by a new combination of cells. It is possible, even probable, that an afferent impulse reaching the spinal cord from a viscus, awakens, by close association with some somatic sensory nerve cells, an impulse which is transmitted to the brain over the ordinary route of somatic pain. In other words, these visceral afferent impulses seek, on reaching the cord, the easy route of transmission and are interpreted by the higher center as somatic in origin. This, too, explains the method by which these visceral disturbances awaken pain in somatic areas whose nerve supplies come from spinal segments above or below the segment into which the afferent visceral nerves pass.

One of five general conditions may be signified by abdominal tenderness:

1st. A lesion of an abdominal viscus.

2nd. A lesion of the wall.

3rd. A lesion of a viscus outside of the abdomen awakening tenderness in the abdominal wall.

4th. A central nervous lesion or one which implicates nerve trunks supplying the abdominal wall.

5th. A systematic disorder accompanied by abdominal pain and tenderness.

Before discussing these conditions, attention is called to the necessity of palpating correctly to elicit tenderness.

The degree of sensibility of different individuals varies greatly in the normal. One remains practically comfortable under rough handling, while another objects to the mildest pressure. It is always well to note the general sensibility of a patient before proceeding to obtain evidence of a local increase of sensibility. It has probably happened time and again that the first touch of the examiner has called forth an expression of discomfort and led to a premature announcement of "appendicitis," "gall stone disease," or "pelvic inflammation."

In commencing to palpate always begin upon an area least suspected of harboring disease. This gives an idea of the normal response; moreover, the patient is placed off guard and when the tender area is approached the muscles are not fixed guarding against pain.

The method of palpating will determine to a large extent the credibility of the tenderness obtained. The fingers are only too often used as prods to awaken pain instead of intelligently to play upon the abdominal wall challenging the organs within to declare their condition. They should be made to act like individuals, each conscious of the pressure being exerted (its direction, degree and abruptness and the resistance encountered). No one can obtain reliable results by palpating the abdomen as a moss pillow is kneaded into softness. The first touch should be gentle and soft; deep palpation should be last. The tips of the fingers should be used only to more exactly define the seat or character of tenderness previously demonstrated under their palmar pressure.

In this connection percussion should be mentioned as a valuable means of locating and defining a tender area. There is no better instrument for this purpose than the middle finger. By light percussion a nice distinction may often be made between a deep seated visceral lesion and a referred tenderness in the area of somatic nerve distribution.

In locating a lesion associated with abdominal tenderness the question naturally arises: Are there some special features of this tenderness which will shed light upon the diagnosis? This may be discussed under the following heads:

1st. Superficial tenderness.

2nd. Deep tenderness.

3rd. The outlines or exact location of the tenderness.

4th. The accompanying objective symptoms.

5th. The character and associated subjective symptoms.

Superficial tenderness is limited to certain distinct areas of cutaneous nerve distribution. These areas have been clearly indicated upon charts to which fact reference need only be made. These cutaneous areas are defined by gentle touch or pinching. The finger passed over the hypersensitive area feels rougher than over normal areas and awakens a sense of burning or rawness. There is no swelling as a rule, though redness and zoster eruptions are noted at times.

Tenderness of inflammatory lesion of the abdominal wall is usually accompanied by an exact location not corresponding to the whole area of nerve distribution, a hard resistant feel, and later by redness, edema, swelling.

When a somatic nerve area manifests tenderness it will be observed that certain nodal points have the degree of tenderness exaggerated, the Valle nodes. It must be admitted that tenderness of the abdominal wall over a diseased viscus is not readily differentiated from that which is located in the viscus unless other accompanying features of this tenderness be taken into consideration. Deep tenderness is awakened only by deep palpation and indicates a disturbance of sensibility lying deep. When the parietal peritoneum overlying a viscus becomes involved by the pain-producing lesion the location of the area involved becomes an easy matter through the sensory nerves of the abdominal wall.

The location of tenderness undoubtedly is a most valuable aid in arriving at a diagnosis. It is a fact that a viscus usually lies directly under that part of the abdominal wall which is innervated by somatic nerve fibers coming off from the same spinal segment as the nerve fibers which supply the viscus. This is due to developmental shifting, in like degree, of the splanchnic and somatic structures. It may, therefore, be argued by one, that the tenderness is located in the viscus, and by another that it is in the parietes. The location, nevertheless, bears an important relation to the viscus involved regardless of the actual seat of tenderness. For instance, it may be argued by one that the tenderness due to appendicitis is located in the distribution of the 11th dorsal nerve, its nodal point of greatest sensibility being at McBurney's point; by another it may be held that the involved mesenteriolum lies directly under McBurney's point and its sensory nerves are awakened into response by inflamed lymphatic glands, and still by others that the inflamed appendix is causing painful impulses transmitted directly from the viscus. The fact remains, however, that the seat of tenderness, finding no parietal lesion capable of awakening tenderness, points to the involvement of the appendix.

The areas of distribution of the somatic nerves to the abdominal wall may be stated in a general way as follows:

The 6th and 7th dorsal to the epigastrium, the 8th to the region above the navel, the 10th to the navel region, the 11th and 12th to the rectus below the navel, and the 1st lumbar to the hypogastrium, sending also a twig of the tunica vaginalis. The chief viscera are supplied as follows: The stomach receives its sensory fibers, according to Head, from the 6th, 7th, 8th, and 9th dorsal spinal segments. The small intestines receive theirs from the 9th to the 12th dorsal segments, the large intestine from the same source. The appendix is largely supplied by the 11th dorsal segment. The rectum receives supply from the 2nd to the 4th sacral segments; the liver and gall-bladder are supplied by the 7th to the 10th dorsal segments; the pancreas by the lower six dorsal segments. The kidneys are supplied from the 10th, 11th and 12th dorsal, the upper ureter from the 10th dorsal and the lower ureter from the 1st lumbar. The bladder and prostate receive supply from the sacral segments. According to Head, the ovary is supplied by the 10th dorsal, but the Fallopian tubes by the 11th and 12th dorsal and 1st lumbar. The body of the uterus is supplied by the 11th and 12th dorsal, while the cervix is supplied by the 3rd and 4th sacral. The visceral peritoneum derives its supply from the nerves which supply the particular organs which it covers; the parietal portion is supplied by the somatic branches which reach the particular areas of the wall supplied by each.

Certain diseases are more apt to produce tenderness than others and the known possibility of certain lesions being found in given viscera, often helps to locate the disease. The chief of these is inflammation. The tenderness resulting from inflammation of, for instance, the appendix, the gall-bladder and the Fallopian tubes, helps to locate a lesion when with symptoms of inflammation, one or more of these areas overlying the organs are markedly tender.

The objective symptoms: local muscle spasm, position of the body or limb, the rate of respiration, tympany or dulness, local swelling, pulse rate and temperature, etc., must be considered in arriving at the significance of tenderness. It would carry this paper too far to discuss the significance of all these associated symptoms. I direct attention, however, to an illustration which indicates the value of so doing. Some years ago Murphy called attention to the sudden stop to inspiration when, in gall-bladder

inflammation, pressure is made over the abdomen just median to the tip of the 9th rib. I would call attention to the relief given by deep inspiration when pressure is made over the duodeno-pyloric area the seat of inflammatory lesion, and the return of sharp pain toward the end of expiration. This is due to the interposition of the liver edge and the raising of the fingers off the involved tissues by the inspiratory effort. The point of tenderness is nearly coincident in both lesions and this plan of differentiation between them becomes valuable. Frequently in the female, the area of tenderness is alike for appendicitis and salpingitis. Bimanual palpation of the involved tube associated with distinct exaggeration of the leucorrhea, and perhaps finding the gonococcus, will enable the examiner to make a diagnosis. Nothing in the character of the tenderness and associated subjective symptoms will enable one to positively make a diagnosis.

Between lesion, on the one hand inflammatory and on the other mechanical, symptoms help materially to locate the trouble. Colics with non-infectious symptoms contrast strongly with those fever-producing disorders which are characteristically found in certain locations. Renal stone with the urinary symptoms, and ileocecal invagination with the alimentary symptoms, contrast sharply with those inflammatory disorders found in the right abdominal region.

The locating of a visceral lesion of the abdomen associated with tenderness and pain must depend often to some extent upon associated symptoms, both objective and subjective. A purely visceral lesion unassociated with parietal complication frequently refers pain to the median territory, umbilical or epigastric. It is commonly noted that pressure over an appendix causes pain referred to the umbilicus, and handling of the bowels under a local anesthetic exploration produces discomfort about the navel; lesions of the gall-bladder, the stomach and the duodenum constantly awaken pain in the epigastrium. On the other hand, pressure over a distended colon may awaken pain at the seat of an inflamed appendix, and pressure upon any area of a distended abdomen may produce a painful response from a diseased area not directly under the point of pressure.

The most misleading symptom is pain when referred to the opposite side of the abdomen or when referred to a territory above or below the seat of lesion. A stone in one kidney may awaken pain in the opposite, an ovarian disease may cause an intense pain under the breast.

Diseases of extra-abdominal viscera may awaken tenderness and pain in the abdomen. Pulmonary and pleural inflammation have frequently been mistaken for peritonitis, enteritis and appendicitis. I have seen a heart lesion cause all the symptoms of gastric ulcer except the vomiting of blood. A careful chest examination alone will enable the examiner to locate the disease.

Systemic disorders or intoxication, uremia, arteriosclerosis, the erythemata, toxic neuritis and metal poisonings will not unfrequently awaken abdominal pain. Tenderness may likewise accompany the pain and require careful examination to locate the disorder.

Lastly, I would call attention to those pains of central origin which are referred to the abdomen. Pott's disease, tabes and tumors in the spinal canal illustrate this class. Usually the subjective pain is but accompanied by tenderness, at least not of any acuteness.

THE INDUCTION OF PREMATURE LABOR IN AMAUROSIS AND AMBLYOPIA, IN CONNECTION WITH THE ALBUMINURIA OF PREGNANCY.*

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Nearly twenty years ago I was asked by the then President of the Academy to read a paper on this topic,† and I therefore feel distinctly honored in being asked to repeat it before the same learned body after so long an interval. While much will be added to the original paper, nevertheless, in the ordinary nature of the case, a small part of it will, of necessity, be a repetition of what has already been published.

Among the indications for the induction of abortion or premature labor in the albuminuria of pregnancy disturbances of vision have not received the attention which the great importance of the subject seems to demand. It has long been known that pregnant women are liable to affections of visions, from slight impairment of sight to even complete and permanent blindness. This fact was also known before the discovery of the ophthalmoscope revealed the real cause of the blindness, attributed to affections of the brain. Loss of sight may occur at any time during pregnancy or after delivery, and may recur at several successive pregnancies, but is more apt to take place in the later months. The

* Read before the New York Academy of Medicine, December 19, 1907.

† *N. Y. Medical Record*, January 28, 1888.

affection of vision may last for weeks, and then after labor, complete recovery may ensue, or the sight may be completely lost.

The changes in the eye in the albuminuria of pregnancy, are essentially the same as those observed in the course of chronic nephritis. Without entering into a description of these,—which is not necessary for present purposes—it will be sufficient to designate two ways in which the sight may be impaired:

1. A sudden more or less transitory or complete loss of sight (uremic amaurosis) without appreciable changes in the fundus oculi.

2. A gradual failure, at first not complete loss of vision, with characteristic changes in the retina and optic nerve which in time may lead to blindness (neuro-retinitis, Brightii or albuminurica). These facts having been so well established, it would seem strange that it is of comparatively recent date that the induction of premature labor, solely with the view of arresting the progress of the eye disease, has been advised, but such is the fact. I have looked over a number of the more important works on Obstetrics,* both ancient and recent, with reference to this point, and while they all mention the occurrence of visual disturbances, there are, with only two exceptions no suggestions as to this being the indication for bringing on premature labor. These two exceptions occur in Webster, 1903, and Hirst, 1906. The former says: "If ominous symptoms arise, including failure of vision, abortion may be induced." The other says that among the indications which point imperatively to the induction of premature labor, in the interest of the mother, is the failure of vison. The text-books on ophthalmology† are altogether quiet on this subject or, at least, very conservative. I have looked over a number, and the result has been a failure to find any special reference to the necessity for interference in such cases, or but faint arguments for taking active measures to prevent disaster to sight.

Swanzy and Werner, 9th edition, 1907, say: "Taking into consideration the serious import of the eye symptoms for the life of the patient, it is a question whether, in many cases of pregnancy, with albuminuric retinitis, abortion should not be done." This advice, however, it will be noticed, is based upon the known fact that when the eyes are affected, the prognosis for life is bad,—rather than with a view of preserving sight. Ball, 1904, says the question whether premature labor should be induced, should receive careful attention. In the Norris and Oliver System of Ophthalmology, there are two articles of a similar nature, but this work can hardly be called a text-book.*

We, therefore, are naturally led from the foregoing facts, to consider whether it is ever justifiable or proper to provoke premature labor, or abortion for the restoration or preservation of sight alone, even when other symptoms, usually recognized as sufficient cause for this procedure, may be wanting. And it is the main object of my paper to discuss this very phase of the subject. For this reason, it seems especially desirable to bring the question before a body like this, composed as it is, of obstetricians and general physicians, rather than before a society made up of specialists alone. For the question as to the propriety of such a course as well as the indication for its adoption, can be best settled upon a proper scientific basis by the obstetrician and ophthalmologist, acting in conjunction. It will require the examination of the fundus oculi by a competent oculist to decide whether the retinal mischief, alone, is sufficient to warrant such a serious operation. But there may be other considerations to be taken into account, which he is not so competent to decide.

The credit for first having caused the induction of premature labor, for the only reason that permanent blindness was threatened, belongs to our late distinguished Fellow, Dr. E. G. Loring, who has given in an admirable paper† on the subject, his experience in the matter. Although Loring's case was not clearly one of uremic amaurosis or retinitis albuminurica,—in the sense in which we are now considering the subject,—but of atrophy of the optic nerves aggravated, if not caused by rapidly succeeding pregnancies, it, nevertheless deserves our consideration here as being the first case of the kind published, in which the operation was performed for the preservation of vision.

"The patient, in whom one eye was already blind, was thirty-five years of age. The vision of the other eye was threatened. She had three children, and before the birth of each, impairment of vision, so that after the third child's birth, she was blind in the left eye, and in the right eye, vision = 1/3. Becoming pregnant again, and loss of use of the remaining eye being feared, abortion was induced at the third month, and she made a good recovery, the vision becoming very much improved. Whether or

* Lusk, Matthews, Duncan, Caseaux, Tarnier, Cyclopedia of Obstetrics and Gynecology, 7th Revised American Edition, Charpentier, translated by H. Grandin, of New York. Text-books: Warren, 1903; Wright, 1905; Webster, 1903; Hirst, 1906; Peterson, 1907; Eden, 1906; Williams, 1908; Edgar, 1904.

† Swanzy and Werner, 1907; de Scheweinitz, 1906; Parsons, 1907; Theobald, 1908; Hansell and Sweet, 1903; Ball, 1904, and Fuchs in his last edition.

* In the discussion Dr. Jacobi called attention to de Schweinitz's book, in which he says that the indication for the production of abortion is the persistence of a loss of vision in previous pregnancies.

† Transactions of the American Ophthalmological Society, 1883.

not the condition of the kidneys had anything to do with the loss of vision in this case, it seems evident enough that the successive pregnancies had. The usual symptoms of albuminuria were wanting, and there were at no time evidences of albumin in the urine. But for all this, may not the condition have been due to the effects of uremic poisoning on the optic nerves, finally resulting in atrophy of the discs? In order to obtain the author's own opinion, a note was addressed to him, which is so interesting that we may be excused if we quote it in this connection. "I do not consider that my case depended on kidney disease, as we are able now to recognize it. I went out of my way to insist that after every known test had been exhausted, no sign of kidney disease could be found. Now, as to whether in this case there was neutritis without atrophy, depends I think, on how we look at it. The ophthalmoscope certainly showed that there was some blanching of the disc,—indeed, a great deal,—but, on the other hand would you say it was a case of '*progressive atrophy*,'—a term which I had used in the letter to the doctor—which improved in vision from counting fingers in a few feet, up to vision = 2/5? There would seem to be in this case a mixture of inflammation (neutritis) and atrophy. If taken early enough the inflammation may be reduced so that vision improves, and yet some atrophy remains, as seen by the mirror. You may speak of *uremic amaurosis*, and if so, what and where is the lesion? For example, there are cases of so-called *uremic* blindness when there are no ophthalmoscopic signs at all; although in these there might have been if death had not intervened. In a great many of them I am induced to think that there is a retro-bulbar neuritis as the initial lesion, which may show itself at a later day as an atrophy of the disc. Still, we know very little about the matter."

I have already made reference to uremic amaurosis, not, however, venturing any explanation as to what the lesion, in such cases, is, as it is a mere matter of speculation and no changes in the eye have been seen. But whatever may be the cause there seems to be no good reason why atrophy of the nerve may not result from obscure disease of the kidney. But I am now able to add, in confirmation of this view, at least one case of my own. In this instance, the patient became totally blind from uremic amaurosis, there being no changes in the fundus oculi, but later on total atrophy of the nerves ensued. I shall have occasion to refer again to this case, later on.

Dr. Loring's suggestive remarks gain force when we consider that there are many cases of granular kidney, in which albumin in the urine is not detected,—at least, not for a long time. Aside from this very interesting case which has been briefly sketched as the first,—so far as ascertained, of the kind published, the author's paper includes the subject of disturbance of vision in the albuminuria of pregnancy, and very ably advocates the importance of the induction of premature labor in cases where loss of vision is threatened. Since this publication would seem to justify the priority of Loring in recommending this important procedure, his case is given the first place in these remarks, and throughout this paper frequent reference to it will be made. That his publication caused increased interest in this matter, is shown by the appearance of another article, on the same subject, which soon followed, by Dr. W. O. Moore.* He points out that, although Loring's was the first published case, in which premature labor was actually performed, Dr. W. J. Scott,† of Cleveland, Ohio, in 1875 called attention to the necessity of producing premature labor but does not mention any case in which this was done. In a case reported by Dr. Holmes,‡ of Chicago, premature labor was advised, not on account of the blindness, but because of the general condition of the patient, she having at the time a pericardial effusion.

More recently, the subject was fully discussed in a Meeting of the New York Ophthalmological Society, April 11th, 1887.

I shall now very briefly relate a series of cases, first, in which the patient was either allowed to go to full term or in which premature birth occurred spontaneously, and, second, in which premature labor was induced artificially to see whether the permanent results as to the vision, were improved by the procedure, as by this means we can best judge as to the advisability of this method of treatment.

First of all, I shall report two cases of my own. The most strikingly lamentable one, in which sight was lost completely by uremic amaurosis, was that of a primipara, of 21 years. She gave birth to her child on Dec. 23d, 1905. Her eyesight began to fail about one month before delivery. Her urine contained albumin, and she had suffered from various varieties of uremic poisoning for a year or more previously. When I saw her in consultation with her family physician, after the child's birth, she was totally blind. The pupils were *ad maximum* dilated, and did not respond to light, but the ophthalmoscope showed no changes, that I could appreciate, in the fundus, although I thought the arteries were rather small. The later picture of this case was that of com-

* *New York Medical Journal*, April 17, 1886.
† Transactions of the Ohio State Medical Society, 1875.
‡ Archives of Ophthalmology, Vol. 10.

plete atrophy of the optic discs. One can but regret that premature labor had not been induced in this case for does it not seem reasonable that, had this been done, the blindness might have been averted?

This is the only case I have seen in which permanent loss of vision resulted from uremic amaurosis, without changes in the fundus, although many such have been reported.

Mrs. B., aged 36, was seen by me October 2nd, 1880, six weeks after confinement in consultation with Dr. Lees. During pregnancy, she had several attacks of dimness of vision nausea and headache, with albumin in the urine. Toward the latter end of the eighth month, the sight became more seriously affected, and this continued after her confinement, as a "film before the eyes." Examination of the eyes at this time, showed a very well marked, though not high degree of neuroretinitis. There was venous hyperemia, slight haziness of the retina, and the outlines of the nerve were indistinct. At the region of the macula lutea appeared several white patches, which assumed the stellate arrangement so characteristic of Bright's retinitis; albumin still in the urine, but much less than before and just after confinement. The sight at this time was not accurately ascertained, as the patient was still in bed.

October 19th,—V. $= \frac{20}{40}$ in the left, $\frac{20}{50}$ in the right. The ophthalmoscopic appearances had much improved, and there was still less albumin in the urine.

December 16th. The ophthalmoscope showed a slight haziness of the retina, and some dilatation of the veins; no longer any albumin. From this time on the patient made a good recovery, and the vision became normal. For a long time, however, she complained of asthenopia and blurring of objects. This lady has been under observation occasionally, every year since this occurrence,—now seven years ago; she has, fortunately, never again become pregnant, and has been in full possession of useful vision.

This is one of the most fortunate recoveries which has come under my notice and for this reason alone, is here inserted. The result is hardly ever as good as this, for the later changes in the neutritis usually cause some atrophy of the nerve and retina, with corresponding loss of sight. In order, however, to be impartial in the selection of cases this was reported as one in which premature labor was not induced. It will be noticed, however, that the permanent dimness of vision did not come on until the end of or after pregnancy. The temporary obscurations of sight were doubtless due to uremic amaurosis, without changes in the retina or optic nerve taking place.

The following case is reported by Mr. Robert Lee,* of London, the particulars being furnished to him by Mr. Bowman.

On December 7th, Mr. Bowman was consulted by a lady who was pregnant, and who had rather suddenly, in a great measure, lost her sight. The urine was found to be excessively loaded with albumin. At Mr. Bowman's suggestion the patient consulted Mr. Paget and Dr. West, who anticipated, Mr. Bowman says, as he did himself, that the confinement would be attended with convulsions of a dangerous character. No ophthalmoscopic examination was reported and on January 9th, about one month later, she had a premature confinement of a male fetus, which was still-born. The patient regained her health and strength, but Mr. Bowman regrets to say that the sight has only partially returned.

Eastlake,† quoted by Moore (l. c.), reports the case of a patient, aged 34, who had given birth to nine children at full term and had had no miscarriages. At the birth of the first child she had no ocular symptoms. On the second day after the birth of the second child, and after all her seven subsequent labors, she suddenly became totally blind in both eyes, the blindness lasting from three to five weeks. Ophthalmoscopic examination of the eyes long afterward demonstrated only the existence of contracted retinal arteries and blanched optic nerves. No account of the examination of the urine was given, but the picture may have been that of the last stages of albuminuric retinitis.

Dr. Holmes, of Chicago, published a case which, although incomplete, inasmuch as he does not tell us whether artificial delivery (which was recommended by the attending physicians), not, however, on account of the blindness, but the general condition of the patient, was actually performed.

The patient, aged 35, was a primipara, whom he was called to see in consultation, in the sixth month of pregnancy. The retinae were pale and edematous, the discs indistinct, and the patient was totally blind in each eye. But there was none of the white exudations, usually seen in Bright's retinitis at the macula or elsewhere. The conjunctiva was edematous, and the eyes were immovable. In the right eye a detachment of the retina was present. The patient had anasarca, with albumin in the urine. She was seen by Dr. Holmes six weeks later, and showed in the left eye several light-colored patches

* Transactions of Obstetrical Society, London, Vol. 5, 1863.
† Medico-Chirurgical Transactions, Vol. 46, p. 171.

—atrophy of choroid, bordering the discs. Could read Jaeger No. 1, at ordinary distance. In the right eye there was atrophy of the choroid, and at the site of the former detachment, a long deposit of pigment. She had a central scotoma, and vision = 1/3. The patient was totally blind for three weeks, and entirely color blind for three months.

In striking contrast to the above case, is one reported by Brecht, of Berlin, and referred to by Loring in his paper, in which separation of both retinae occurred during gestation, and where readjustment of both took place after a premature birth, which occurred without any artificial intervention.

In January, 1863, Mr. Lee (l. c.), saw a young lady in the third month of her pregnancy. At that time she was suffering from sensitiveness in the region of the uterus, sickness of the stomach, and general nervous irritability. The pulse, however, was not very rapid, and there was no symptom to excite alarm. On March 21st, two months later, he received a note from Mr. Bowman, desiring a consultation, as the patient had consulted him for defective vision. The urine was loaded with albumin, and there was destructive disease going on in the coats of the eye. As the patient was in the sixth month of pregnancy, and seemed to be threatened with convulsions, and especially, as the symptoms became urgent in the following three days, premature labor was proposed by Mr. Lee, as he believed the affections of the kidney and eyes arose from the pregnancy. Before, however, having recourse to this, it was considered proper to have a consultation with Dr. Robert Ferguson, who thought it inadvisable to induce premature labor—chiefly on the ground that the life of the child would necessarily be sacrificed. It was determined, on account of this advice, not to interfere, but to wait and see what course the disease would take. On April 10th, or three weeks later, there was an attack of convulsions, and as these were sufficient to excite apprehensions that fatal puerperal convulsions would take place—it was considered proper, after a second consultation, to immediately induce premature labor. This was successfully performed, and, with occasional drawbacks, the patient continued to improve for the next ten days, when she could distinctly see the figures on the dial of her watch.

How much better the result, in this case, for the restoration of vision might have been, had the operation been performed earlier.

Cases of this kind, in which the patients were either allowed to go to full term or where, Nature intervening, by causing premature delivery, the patients, the cause having been removed, have shown the good effects upon the impaired eyesight, might be multiplied.

But we turn now to those in which premature labor was induced upon the advice of the oculist, for the purpose of improving or restoring vision alone. A case in which the result obtained from the induction of premature labor, to save the sight alone, and which was most gratifying, was seen by me in consultation with Dr. Arango, of this city, on November 11th, 1885.

The patient was a multipara, aged 40, in the seventh month of pregnancy, and whose sight was so much impaired that she could scarcely find her way about. Vision = 1/10 the normal, in each eye. The ophthalmoscope showed neuroretinitis, whitish exudations scattered over the fundus, but especially at the macula, and numerous hemorrhages. With the exception of albumin in the urine, there were absolutely no other evidences of disease of the kidneys. The immediate induction of premature labor was advised, in the belief that if the patient was allowed to go on to full term, she might become irrevocably blind. After a delay of nearly three weeks, her sight becoming still worse, the above procedure was undertaken by Dr. Arango, on November 30th, and she was delivered of a still-born child, which had probably been dead some time. On January 6th, of the succeeding year, a little more than five weeks after the operation, the patient came to my office: I found vision = 20/70. There was very great improvement in the retinae, although still some neuroretinitis and exudations. The improvement in vision from this time on was such that she never came to see me again, and Dr. Arango wrote that her sight had become perfectly restored.

Moore (l. c.) reports the following case: A German woman, aged 48, pregnant with the twelfth child, has never had any ocular symptoms during previous pregnancies. She said that three weeks before she had a chill, and thought she had taken cold. Since then she has not felt so well. Shortly after this chill, she had impairment of sight in each eye, and although not completely blind, she was nearly so. She came under Moore's notice on January 2, 1881. She was anemic, no anasarca, urine contained about one-third albumin and some epithelial casts. The ophthalmoscope showed the media clear, the retinae much swollen and neuroretinitis, with exudations and hemorrhages well marked, more especially in the macula of the left eye. Right vision = 1/70, the left, fingers at one foot. The field of vision was so much narrowed that the patient was unable to walk alone. She was transferred from the Eye Infirmary to the New York Infirmary for

Women and Children, on June the 5th, when premature labor was brought on, in the eighth month of pregnancy, of a still-born child. By June 30th, there was only a trace of albumin, and vision had very much improved. The patient's vision, October 8th, was 20/50 in the right eye, and 20/70 in the left eye, at which point it has been maintained.

One of the most forcible examples of the value of the procedure which this paper advocates, is the case reported by Dr. O. F. Wadsworth,* of Boston, in which, besides there being ocular symptoms of albuminuric retinitis, there was detachment of the retina in both eyes, resulting in complete loss of vision. After the induction of premature labor, the retinae became reattached, and useful vision was restored. Dr. Risley, one of the most competent and conservative of ophthalmologists, in the discussion which followed the reading of this case, said: "There are cases in which you are not justified in allowing the pregnancy to go on to full term." He also reported a case in which labor was brought on in the fifth month of pregnancy, and the eyes recovered so completely that he felt, and so did the woman's husband—a very intelligent physician—that the procedure was thoroughly justified. The patient would unquestionably have been blind if the pregnancy had been allowed to go on to full term—if, indeed, she had not lost her life.

At a meeting of the New York Ophthalmological Society, April 11, 1887, Dr. Callan reported the case of a woman, aged 23. The previous August she was within two months of full term, when she became entirely blind. Premature labor was induced and three days after she could see large objects. Two months later she had entirely recovered. She then thought she was pregnant again. Vision, right eye = 20/40, left eye = 20/70; nerve atrophic, with white spots in the region of the macula, and she thought her sight was failing. Dr. Callan advised her to wait two months before doing anything, and asked the opinion of those present. Dr. Webster thought Dr. Callan's advice was good, and said it was like a case which he saw in consultation with Dr. Lawrence Johnson, the patient being in the second or third month of pregnancy. In the eighth month she had convulsions lasting all one night; in the morning she was blind in both eyes. The ophthalmoscope showed absolutely no changes. The loss of sight was probably due to a uremic poisoning. Dr. Webster then advised premature delivery. This was performed within twenty-four hours. The child lived and the mother recovered, her vision being restored.

* Transactions of the American Ophthalmological Society, 1887.

Dr. Cocks said he had also reported three or four cases, and thought that the prognosis was good where there is no retinitis albuminurica. Dr. Callan said that Dr. Holmes, of Scarboro, had reported a case like these, and that in the case which he, himself, reported, there were, no doubt, changes of an inflammatory nature in the retina.

Is not the lesson to be learned from these cases so clear that "he who runs may read"? Here we have cases in which the patients were allowed to go to full term—in some instances through successive pregnancies, with serious impairment of sight, and in some cases they became blind; others suffered permanent impairment of their sight; again, premature labor without interference occurred, with the immediate improvement of vision, while, again, in the cases, from the classical one of Loring's, down to the ones more recently published, in which the induction of premature labor was resorted to, the sight was always improved in the most unpromising, and in the most favorable ones, fully restored. The prognosis in all these cases, especially where there are changes in the retina, will no doubt be modified by the pre-existence of chronic nephritis; in fact, it is held by some observers — Frerich and Braun especially—that puerperal convulsions, presumably also, therefore, neuroretinitis, occurs only in pregnant women or those suffering from Bright's disease. This view, however, is not concurred in by Seyfert, of Prague, and many others.

Fordyce Barker* says: "I express the conviction, based on experience and observation, that in nine out of ten, in private practice, where albuminuria is found in pregnant and parturient women, the structural lesions of the kidney, which may be properly designated as Bright's disease, did not exist previous to pregnancy. And even in hospital practice, where the organic changes exist in a larger proportion of cases, it is my belief, after a careful review of my experiences, that the assertion I have just made is true, in seven out of ten patients. I may here express my conviction that the albuminuria of pregnancy and the organic disease, which can properly be termed 'acute Bright's disease,' in the non-pregnant, should be regarded clinically, etiologically and sometimes pathologically, as distinct diseases, requiring different therapeutic treatment, and having essentially a different prognosis."

The same conclusion is arrived at by Lanford and Scöbl,† as well as by many others. Be this as it may, in the cases where chronic nephritis is present, the prognosis both for life and vision is worse, for the

* *Medical Record*, February 11, 1888.

† Oliver and Norris System of Diseases of the Eye.

removal of the fetus does not cure the kidney disease. Everyone engaged in ophthalmic practice will bear me witness, how fatal the prognosis for life is in chronic Bright's disease, with neuroretinitis. That, on the other hand, so many cases in pregnant women, with albuminuria and retinitis, get well, would seem to be a forcible argument against this opinion. Does not the argument seem a strong one —that in all cases in which there are changes going on in such delicate structures as the optic nerve and retina, the danger of their being destroyed and blindness resulting, is rendered greater by allowing the labor to go on to full term, and waiting until very much more damage is done?

It seems as though Nature herself attempts to guide us to the proper course to pursue, for it must be noticed how often the occurrence of premature labor takes place without surgical interference, and how much better the results have been than when labor went on to full term. Why, therefore, should we not anticipate the action of Nature, especially in the last months of pregnancy, when the child is still viable? Life is often endangered when vision is, and when this is the case, there can be no doubt as to the weight of authority among obstetricians being in favor of abortion or premature labor. Is not death itself preferable to blindness, and what woman left to choose between the alternatives would choose to become a mother at such a cost? But there are also cases, like those of Loring's and others, in which the impairment of vision comes on earlier in gestation—probably of more frequent occurrence than is generally supposed—and in which the responsibility becomes infinitely greater. In these cases the impairment begins early and continues to grow worse throughout the progress of gestation, and these symptoms recur in successive pregnancies, until eventually total blindness is the result.

Dr. Howe,* of Buffalo, in an analysis of cases occurring over an interval of fifteen years, says: "These tend to show that when vision begins to be impaired only in the last two weeks of pregnancy, recovery follows almost invariably."

Of those described as being in the eighth month or thereabouts, when the retinitis commences, not one-half recover, and some do not materially improve. Again, where these begin earlier than was estimated as the middle of the seventh month, when Nature did not interfere by bringing on a miscarriage, and when the patient escaped with her life, it was only to remain blind forever afterward.

Culbertson,† from some collected statistics, gives as the result of the albuminuric retinitis of pregnancy, recovery of full vision in 58 per cent. and blindness in 25 per cent.

Silex* reports twenty-six cases. Of these eleven recovered vision 1/6, ten vision below 1/6, and five were almost blind.

With this array of figures and facts before them who can but conclude that, in extreme cases, where the sight is either lost or the risk of its loss is imminent, the production of premature labor, or even abortion, is justified and even demanded?

It, no doubt, will be argued by some of my hearers that the reason why no interference should take place until the patient is actually suffering from some grave constitutional trouble, which threatens life, is that such interference would be unjustifiable, both on moral and legal grounds. In answer to any such objections, I cannot do better than to quote the words of Loring: "As for the moral aspects of the case, or what, in some minds, passes for such, I have neither the time nor the inclination to go into such a wide field of discussion. There may be physicians who, as physicians, even unrestrained by legal considerations, might think it right that the highest and most useful of all our senses should be sacrificed, rather than that any interference with the workings of Nature should take place. From a medical standpoint it is hard to conceive of such a thing. And this is all that interests us here. From a legal point of view, it is difficult to believe that there can be but one opinion, and that is, in favor of the operation when the circumstances are such as to demand it. The law states that 'premature delivery shall not be performed, except for the preservation of the life of the mother or the child,' and it is precisely for the preservation of life that it would be done when eyesight is threatened. For the one is part and parcel of the other, and in operating to save the sight, we are operating to save life. Thus Simpson many years ago declared, and the opinion is universally upheld to-day, that symptoms such as headache, giddiness and derangement of sight are merely premonitory symptoms of puerperal convulsions, and when they are associated with albuminuria, we may be certain of the liability of our patient to the supervention of convulsions. Moreover, it so happens that the derangement of vision occurs at a time when, as Graefe puts it, 'the prognosis for the life is even worse than for sight.'

Given, therefore, a pregnant woman, with loss of vision or organic lesion of the retina or optic nerve as the prominent or even sole symptom, no one can say that a series of convulsions may not set in at

* *American Journal of Ophthalmology*, Vol. II, Nos. 5 and 6.
† *American Journal of Ophthalmology*, 1894, p. 133.

* *Annals d'Oculistique*, 1895, p. 127.

any moment which will carry everything before them, including not only the life of the child, but also that of the mother."

It is with no desire to encourage license in the production of abortion or of premature labor, which many women only desire the slightest excuse to consent to, and which, alas! some unscrupulous physicians are too ready to advise, but in the firm belief that the threatened loss of one of the noblest of our faculties—the sense of vision—should be considered to be of the same importance as the other symptoms which are said to more directly threaten life, and to justify such a serious procedure as the induction of premature labor, that this paper has been written.

From the preceding facts, we are led to deduce the following conclusions:

1. That in all cases of pregnancy, it is not only desirable to examine the urine from time to time, but also to examine the eyes with the ophthalmoscope, even in a routine manner, since, as is well known to oculists, a large percentage of cases having lesions of the optic nerve and retina, either have none or make no complaint of loss of vision; but which may lead after a long interval, through the secondary or atrophic changes, to complete blindness. It is also to be borne in mind that varying degrees of blindness, and which usually do not appear until the end of pregnancy, do not show that the retinal lesion may not already have been in existence for some time, and that the timely examiis soon to be feared, and labor should be induced nation of the eyes might have saved sight and even life. Moreover, the evidences of disease of the kidneys not infrequently show themselves in the eye before they do in the urine.

2. In uremic amaurosis, without changes in the eye visible to the ophthalmoscope, even should the usual symptoms, such as dizziness, nausea and threatened convulsions, be absent, their occurrence without waiting until the life, as well as the sight of the patient is in danger.

3. Where neuroretinitis, with grave organic lesion of the optic nerve and progressive loss of vision is present, in the later months of pregnancy, and the child, if not dead from the effect of the kidney disease, may be viable, it is not only justified, but urgently demanded that premature labor be resorted to. If the danger of delay is such that to wait until this time would be to doom the patient to blindness, the operation should be performed even in the earlier months.

4. In those instances in which, in one pregnancy, affections of vision have occurred which have remained permanent, abortion or premature labor in the following pregnancies which occur, may be rendered necessary.

5. Prognosis as to the recovery of vision is better in cases in which chronic nephritis does not already exist.

6. The induction of premature labor or abortion, both morally and legally, is justified in order to save vision as well as life.

7. Women having once suffered loss of or impairment of vision during pregnancy, should have the danger of again becoming so, and the relation of cause and effect fully explained to both themselves and their husbands.

107 MADISON AVENUE, NEW YORK CITY.

A USE OF THE AUTOMOBILE IN SURGICAL PRACTICE, WITH REPORT OF AN ILLUSTRATIVE CASE.

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ROME, N. Y.

The following case is reported as an illustration of a method of overcoming one of the most trying necessities of emergency surgery, the provision of a suitable light. All of the country farmhouses and many city homes have no other light than oil lamps, which are inadequate for surgical purposes. It is my hope that this report may contain a suggestion which may be of help to anyone situated as I was recently, in the country, with a patient needing a major operation, and whose condition would not permit of removal to suitable hospital surroundings.

On October 23, 1907, at about 4.30 P. M., a 'phone message was received from the family physician of Mr. B., requesting me to come immediately in consultation in a case of suspected appendicitis, prepared to operate if it was thought advisable. The home of the patient, a small tenement farmhouse, was reached by automobile at 6 P. M., after a ride of fifteen miles.

I found a male patient of 30, married. Family history negative. Personal history, always well except a severe attack of "stomach-ache" the previous April which lasted about twenty-four hours and was accompanied by vomiting. The pain was quite severe, of no definite localization, and was followed by some soreness over the belly. Present attack: The patient retired about 10 P. M. the night of October 22d, apparently in perfect health. About 2 A. M. he was awakened by "cramps" in the stomach, followed in the course of one-half hour by severe vomiting, the supper of the previous evening being thrown up. This gave relief and the man slept until 7 A. M., when the cramps again awakened him,

but relief came again after a full bowel movement. But he said he "did not feel just right" and remained in bed. About 10 A. M., a light breakfast of toast and coffee was taken, and at 11.30 A. M., the cramps again returned, were more severe than at first, and the breakfast was vomited. After this, relief did not follow as before, but the pain became more severe and the "bowel cramps" were almost unbearable.

Home remedies and local applications having given no relief, the family physician was sent for and arrived about 3.30 P. M. The pain had suddenly stopped about 2.30 P. M., and the patient was better until just before the doctor arrived, when he had a severe chill. The temperature was found by the physician to be 102°, pulse 112, and there was marked abdominal tenderness.

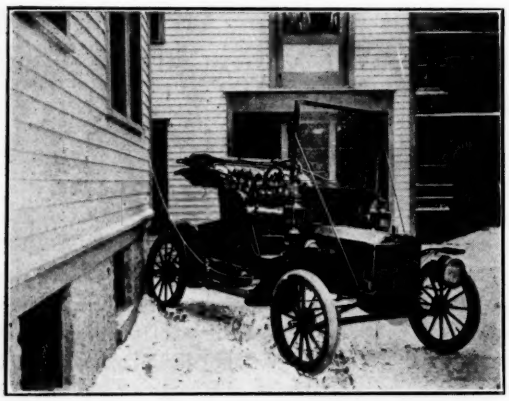

Fig. 1. Automobile backed up to the kitchen window. Long tube attached to gas tank, passing into the room.

At the time of my physical examination the temperature was 103°, pulse 120, and there was board-like rigidity over McBurney's point. The diagnosis of acute appendicitis with perforation was made and immediate operation advised and accepted. The kitchen was used as the operating room, and the "family ironing board" with either end on a small stand served as an operating table.

While the nurse made the operating room preparations, preparations for providing light were made in the following manner.

The automobile was driven as close as practical to the kitchen window, the large searchlight lamp detached from the machine and passed into the kitchen. Rubber tubing ordinarily used for drainage was spliced by a glass drainage tube and used to connect the gas tank on the side of the auto with the lamp in the kitchen surgery. The gas was then turned on, lighted and the illumination found to be ideal. In fact, the light was just as good as in any well-appointed operating room.

The patient was prepared on the table. The usual McBurney incision was made and a large gangrenous appendix with a perforation, and an enterolith in about its middle portion, removed. The abdomen was closed without drainage, and the patient made an uneventful recovery.

The pathological condition of the appendix, demonstrated at operation, suggests the probable outcome of the disease had we been obliged to have wasted time in his removal to a hospital. Next to the danger of time loss, we cannot but be impressed with the great danger in the mechanical disturbance of the parts in moving a patient in such a condition over rough country roads, which of necessity would tend not only to mechanically scatter the infection caused by the perforation, but by starting a peristalsis of the stomach and intestines, thereby also scatter the infection to such a degree as to cause general peritonitis.

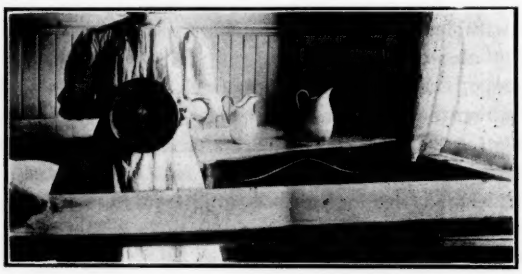

Fig. 2. Arrangement of the kitchen for operation. Assistant holding the automobile searchlight so that the light may be thrown in any direction desired.

Next to the early diagnosis of the family physician and his prompt action, I feel that the auto, with its gas tank and lamp, was a strong factor in the means of saving the man's life.

CAUSES OF CONGESTION OF THE BILE PASSAGES PRECEDING CHOLELITHIASIS.

Preceding cholelithiasis there is usually a congestion or catarrh of the biliary passages, causing a stagnation of bile, with possible infection, and secondarily the formation of gall-stones. This hepatic condition has for its origin: (1) toxic influences, arising from without or from within the body; (2) alterations of gastric or intestinal digestion, producing such modifications of the reflexes in the duodenal end of the stomach as to either limit or increase the hepatic secretion, thereby inviting the development of cholelithiasis; (3) circulatory conditions of the liver secondary to heart disease, either valvulitis or myocarditis, or perhaps even arteriosclerosis; (4) morphological conditions causing displacement of the organ.—JOHN H. MUSSER in *The Therapeutic Gazette.*

POST-OPERATIVE TREATMENT OF ADENOID PATIENTS.

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At a recent clinic I was asked for an expression of opinion as to the best method of caring for patients who had been operated upon for the removal of adenoids. As the post-operative treatment of this class of patients is of importance equal to, if not greater than that carried out in the operating room, I made it the subject of a clinical lecture.

To better illustrate the necessity for treatment in these little patients, I shall state the case of a little girl, nine years of age, from whom we removed adenoids two weeks ago. She has a typical adenoid face, undeveloped superior maxillary bones with absence, or nearly so, of the antrum of Highmore, is pigeon breasted, and is a mouth breather. She is in every way below par. Her mother tells me that she has been delicate ever since she was two years of age; that for a number of years back she has suffered from bronchitis every winter; has had indigestion most of her life; is nervous and irritable, requiring much more care than the other children in the family. She has suffered from a discharge from both ears. Her appetite is poor; she is backward in her school work and has not the ambition of her brothers and sisters. The lack of peaceful sleep due to mouth breathing undoubtedly accounts for her lack of mental application and inattention.

If adenoids are merely a local expression of a general condition manifesting itself during the early years of life, as claimed by some, or if they are hereditary or racial, or stigmata of degeneracy, there is a very strong argument for systemic and tonic treatment after their removal.

It is easy to understand that children permitted to go through the period of second dentition with nasal obstructions will bear the marks of this neglect throughout life. Children suffering from adenoids growths to a point of nasal obstruction lack proper oxygenation and are below par physically and mentally. The Superintendent of Schools of New York City has stated that children suffering from lymphoid tissue hypertrophy to a sufficient extent to make them mouth breathers improve from 75 to 100 per cent. in their mentality after the removal of these growths.

Realizing that life depends upon air, light and food for its existence, and that air and food are of little use unless properly prepared for assimilation, we are in a position to at once explain the generally weakened condition of these patients, for the air taken through the mouth not only fails to give up its oxygen, and properly nourish, but acts as a direct irritant to the delicate mucous membranes lining the bronchial tubes and lungs. Children who are mouth breathers fail to absorb sufficient oxygen from the atmospheric air and therefore suffer from oxygen starvation. With the blood impoverished, there is naturally a non-development of the glands of the alimentary tract with absence of the juices so necessary for the digestion of foods, therefore, food even in ordinary quantities, will not be properly assimilated. Improper oxygenation and retention of effete matter of normal metabolism account for most of the symptoms these patients manifest. It is the duty, therefore, of every physician to see that proper respiration is established in all these patients and that proper food and tonics are administered to make up the deficiency suffered for years through the lack of proper oxygenation of the blood and the resulting malassimilation of foods.

It makes little difference whether one uses an anesthetic or not, but the argument that we can operate without an anesthetic because we have the physical power is not a very strong or humane one. I believe the action of the late Queen of England, whereby arrangements were made for these minor adenoid operations to be done under anesthesia in the London City Hospital, was a good one. Every child should be spared the terror of the operation for removal of these growths, whether the operation be done by the finger or with instruments ordinarily used for the purpose. The struggle and fright of these little ones can hardly be considered beneficial to the central nervous system. One case is on record where a child died from fright on the sight of the surgeon a few days after the removal of adenoids without an anesthetic. I, therefore, urge that one use an anesthetic with which he is familiar to prevent the fright and shock and pain to the little ones. I am perfectly familiar with the arguments advanced to the effect that there is much more danger in the removal of these growths under an anesthetic than without; but let me assure you that if chloroform or ether or any other anesthetic is used to a point where only superficial sensation is lost, and where the laryngeal reflex is retained, the danger of blood getting into the trachea and suffocating the patient is nil. The danger from anesthesia in the removal of adenoids comes from profound chloroform or ether narcosis which is unnecessary in the procedure. After the operation and before putting the patient to bed, one should see that

no tags of tissue are hanging in the nasopharynx, a condition not uncommon with new operators.

An important facor in the after-treatment, whether anesthesia has been used or not, is that these patients should be put to bed at once and kept there for two or three days. If they are in the hospital they should not be allowed to associate with other children. With the lymphoid channels of the nasopharynx open they are more than ordinarily exposed to infections. The parts operated upon should be cleansed with an alkaline solution, used in a spray instrument, and I know of no better preparation for this purpose than the normal salt solution (1 drachm to a pint of water) which is always at hand. A very good combination for the purpose is one grain of carbolic acid, four grains of soda bicarbonate, water one ounce. After the mucous clots and crusts are removed with the alkaline wash, the parts should be further protected every few hours by a thorough application of a menthol oil solution. The nostrils should be freed from accumulations and the abnormal act of blowing the nose should be done properly by first closing one nostril, then the other, followed by a prolonged blast through the free nostril.

Milk if given twelve to eighteen hours after the operation, is apt to disagree, as it does not mix well with any blood that has been swallowed. Beef tea or jelly is much better. Ice cream is agreeable to most patients. The sucking of ice or the taking of ice drinks frequently have a depressing effect.

If nausea continues one should give a pint of hot water in order to wash out the stomach as soon as possible.

The important point about the application of an oil solution is that it be free from irritating properties. Most of the preparations prescribed irritate the nasal mucous membrane and in the course of a few hours after their use the patients give evidences of an acute coryza. The base of nearly all oily solutions used by our present day laryngologists is petroleum, and I consider it a much better base than olive oil, which is occasionally suggested. The latter becomes rancid so quickly that only a very small quantity can be prepared at a time. In connection with the petroleum base, one should see that all impurities are removed. This is not always easy, as the price of the doubly refined oil is much more expensive than the oil containing irritating minerals, and therefore there is a temptation to substitution.

The remedial ingredients used in nearly all oil solutions are menthol, camphor, oil of eucalyptus, oil of cinnamon, pine needle oil, etc. One word in regard to these preparations. About one patient in every hundred has an idiosyncrasy which manifests itself when the oil of eucalyptus is used. This should be kept in mind. In prescribing the oil of eucalyptus one should be sure that oil obtained from the eucalyptus globulus tree only is used. It is well known that most of our oil of eucalyptus comes from California and Australia. In California there are about 200 varieties of the tree, and in Australia about 300. In California, men, women and children gather the leaves from this large variety of trees and take them to the still and the oil of the mixed trees is the result. This mixed oil is very irritating if used in sufficient quantities for remedial effect on the nasal mucous membrane. Therefore, one should insist upon the oil obtained from the eucalyptus globulus tree used in filling prescriptions and that oil should have gone through a third distillation.

Another important ingredient that I use in all my oil solutions for mucous membrane medication is the oil of Ceylon cinnamon. It is a very important addition to all menthol oily sprays; without it the preparations have little effect upon the congested condition so often found in the so-called catarrhal states of the mucous membrane of the nose and throat. The oil of cinnamon should be that obtained from the root and bark of the Ceylon cinnamon tree, as the oil obtained from the leaves is very irritating and without remedial effect. Unfortunately for the general user of these preparations, oil of cinnamon from the leaves can be obtained at a very small price while the oil of cinnamon from the root and bark of the Ceylon variety is very expensive.

On account of the great difficulty in securing oil of Ceylon cinnamon and oil of eucalyptus globulus, triple distilled, when prescribed, I have for a number of years used a menthol oil solution, made up as follows:

℞ Menthol
Camphor ..... aa grs. v
Oil of pine needle ..... grs. x
Oil of Ceylon cinnamon ..... grs. ii
Oil of eucalyptus globulus ..... grs. v
Triple distilled petroleum q. s.

The great temptation to substitute cheaper oils in place of those prescribed and the uniform irritation following the use of the prescription as ordinarily filled, has caused me to depend upon the above combination in my nose and throat work where an oil is indicated. I advise patients when post-nasal medication is indicated to nebulize the preparation into the mouth, instructing them to exhale through the nose, thus securing a uniform ap-

plication of the preparation to the whole naso-pharyngeal space. The mucous membrane regenerates in from two to six weeks, so that these patients should be kept on one of the cleansing solutions and the oil spray until all crusts and accumulations disappear from the throat.

The general physical condition that we find in patients suffering from the so-called "lymphoid diathesis," namely, a lack of the bone and blood elements necessary to the well developed child, should have our attention. Treatment should be directed toward the reconstruction and regeneration of the structures. In all patients suffering from lymphoid tissue hypertrophy, whether young or old, we have no remedy equal to iodin and phosphorus. We must, however, avoid iodid of potash in young children as we find it irritating to mucous membranes. As the taste is also disagreeable, we have trouble in securing the cooperation of our little patients in this line of medication. The only patients that we should insist upon using iodid of potash are those suffering from syphilis.

Iodin and phosphorus as found in the extract of cod liver oil is by far the best form in which to use these preparations and it is my practice to put all of these patients, whether old or young, on this remedy. Here again, it is absolutely essential to secure an extract of the oil made by a reputable house. With this I combine the syrup of hypophosphites, iron, lime, magnesia, and malt extract with sufficient flavoring to make the combination palatable and agreeable to children. In this preparation we have an ideal tonic and reconstructive.

This treatment should be kept up until the condition of affairs, which first induced the nasal catarrh and lymphoid diathesis and adenoid hypertrophy, is changed. The question of fresh air in sleeping-rooms, overcrowding of schools, active games in the open air, suitable food and clothing and especially warm hands and feet must have most careful attention. These children must be reeducated in the matter of proper nasal respiration. Patients are kept on this medication until all evidences of malnutrition and improper development have disappeared. Combined with this medication I insist upon the patient taking at least one quart of good rich milk daily in addition to the regular diet.

Another point I insist upon is that all these mouth breathers shall be put through a course of thoracic gymnastics, lasting over a period of from one to five years. Deep nasal breathing with the mouth closed for a few minutes at a time eight to ten times a day will do much to develop air spaces in the bones of these patients who have been mouthbreathers during the developing period of their existence. My effort, therefore, is to develop these cavities so far as possible by directing the patients to take a gymnastic course, impressing upon them the necessity for *expiration* through the nasal cavities. I make a point of this because a great many textbooks emphasize the necessity of *inspiration* through the nose without mentioning the importance of expiration through the same channels.

If, as often happens, the mouth drops open during sleep, even after all obstructions have been removed, I make it a rule to keep the lips closed by applying strips of adhesive plaster over the mouth at bed-time, and educate these patients as to proper breathing.

In conclusion, I would sum up the following points to be kept in mind in connection with the post-operative treatment of adenoids.

1. Keep children in bed for from two to three days after operation, and away from other children.

2. Keep parts clean by use of alkaline washes and medicated mentholated oil solution.

3. Use constitutional and reconstructive medication.

4. See that thoracic gymnastics are practiced for a long period.

5. Oxid of zinc plaster over the mouth at night to keep the mouth closed until normal breathing is established.

6. Watch for return of the growths.

162 WEST SEVENTY-THIRD STREET.

A METHOD OF PALPATING THE BREAST.

The patient should be requested to remove the clothing down to the waist and to throw a cloak around the shoulders. Thus prepared she should be seated in a chair with her back to the surgeon, who standing behind her chair is enabled to palpate the breast with greater ease than in any other position. Palpation should be made with the extended and rigid fingers of both hands, the mammary gland being pressed against the thorax wall without being doubled upon itself. The normal gland tissue will then be recognized as of a soft and almost impalpable consistency, and the presence of any induration will be readily detected. If the breast is compressed between the thumb and fingers the gland will be folded upon itself, and imaginary thickenings and tumors may easily be developed in this way.—J. COLLINS WARREN in *The American Journal of Medical Sciences.*

BLOOD EXAMINATION IN SURGICAL DIAGNOSIS. A PRACTICAL STUDY OF ITS SCOPE AND TECHNIC.

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(Continued from the February Number.)

See notes on p. 83.

OTITIS MEDIA AND ITS CRANIAL COMPLICATIONS.

Otology presents a surgical aspect in which hematological investigation affords valuable diagnostic information. In acute aural disease frequent examinations of the blood yield reliable confirmatory evidences of disease. Symptoms pointing to serious complications of otitis media may be manifest in no other way in from 10% to 20% of aural cases.

ACUTE SEROUS OTITIS MEDIA. A moderate leucocytosis of 10,000 to 15,000 is present.

ACUTE PURULENT OTITIS MEDIA. When simple purulent otitis media occurs, a prompt leucocytosis is induced. The total white cell count may reach 40,000. The polynuclear neutrophiles are increased, but may not rise above 75% to 80%.

MASTOIDITIS. The mastoid involvement is clinically demonstrable in 80% of cases without difficulty. The other 20% of cases of otitis media may present only vague, indefinite symptoms of mastoiditis. In these indefinite, uncertain cases of mastoiditis, blood examinations are of especial value. There is a variable leucocytosis dependent upon the power of resistance of the patient and the degree of toxemia resultant from the bone involvement. The polynuclear neutrophiles vary from 73% to 98%. Pus may riddle the entire mastoid process or merely involve the antrum without giving another symptom as prominent as the blood picture.

The more severe the infection and the greater the tissue destruction the higher becomes the percentages of the polynuclear neutrophiles. Intracranial complications are marked by the highest percentages of polynuclear neutrophiles. If polynuclear neutrophiles are present in percentages lower than 77%, there is probably no intracranial complication. If the polynuclear neutrophiles rise above 86% there is great probability of intracranial suppuration. Sinus thrombosis presents a relative neutrophilic leucocytosis of 86% to 97%.

It is important to recall that so long as bony structures alone are involved in suppurative processes, the polynuclear neutrophiles are present in lower percentages than when there is an invasion and destruction of softer tissues. Pus may, therefore, be present in mastoiditis with the polynuclear neutrophile percentage between 70 and 80. The lower percentages of polynuclear neutrophiles in children under nine years must not be forgotten in determining whether or not there is a relative increase of the polynuclear neutrophiles.

A fall in the total white cell count does not necessarily mean improvement of the aural condition. To signify improvement the fall of the total leucocyte count must be accompanied by a decline in the percentage of the polynuclear neutrophiles. This principle is accentuated in children where the mere falling off of the total leucocytosis without a decrease of the percentage of the polynuclear neutrophiles indicates failing power of resistance. Such a condition urges immediate operation.

CHRONIC OTITIS MEDIA In chronic otitis media, 25% of the cases show slight increase of leucocytes of the polynuclear neutrophilic type. This is marked when drainage is impaired. Careful blood examinations at varying intervals frequently assist in indicating the intensity of the suppurative process and the extent of its burrowing.

BRAIN ABSCESS The blood picture in brain abscess follows the rules for abscesses in other parts of the body. The leucocytosis is usually moderate and seldom reaches 20,000. Following aural disease the leucocytes may not rise above 14,000 to 17,000. Some aurists regard a leucocyte count under 14,000 as favoring brain abscess, while a total count over 17,000 is regarded as suggestive of septic meningitis. As a working rule, this may be at times helpful, but it is by no means accurate. Brain abscesses may present counts of 30,000 and septic meningitis may be present with a leucocytosis of 18,000. The two conditions cannot be differentiated with certainty by the blood picture.

MENINGITIS Secondary purulent meningitis, not infrequently following aural conditions, usually presents high leucocytosis, 20,000 to 60,000. The leucocytosis is of the polynuclear neutrophilic type. The blood gives the picture of suppuration before lumbar puncture is successful in showing the presence of pus in the cerebrospinal fluid.

MENINGITIDES OF OTHER ORIGIN.

TUBERCULOUS MENINGITIS. If meningitis exists without the presence of leucocytosis, the bacillus tuberculosis is the etiological factor. On the other hand, it is

most necessary to appreciate that occasionally leucocytosis may arise in tuberculous meningitis. When such leucocytosis occurs, the white cells rarely rise in number to 20,000.

EPIDEMIC MENINGITIS

80% of cases of acute epidemic cerebrospinal fever show a leucocytosis of 20,000 to 30,000. The higher the leucocytosis, the more purulent is the process in strong subjects. The prognosis is very poor when the white cells number over 25,000. The polynuclear neutrophile are increased, especially when the leucocytosis is intense.

DIFFERENTIATION IN COMA.

To assist in differentiating the cause of a comatose state, blood examination is useful in many cases.

MENINGITIS
CEREBRAL ABSCESS
CEREBRAL HEMORRHAGE

These three conditions cannot be differentiated by blood examination. They are alike in being accompanied by leucocytosis.

BRAIN TUMOR
ALCOHOLIC INTOXICATION
NARCOTIC INTOXICATION

The blood does not differentiate these three conditions. They are alike in inducing no leucocytosis as a rule. Very occasionally leucocytosis may occur with any one of them, but in such cases there is rarely more than a slight polynuclear neutrophilic increase.

UREMIA
DIABETIC COMA
POST-EPILEPTIC COMA

Leucocytosis may or may not be present. The presence of other complications is suggested when high leucocytosis exists with these conditions. In these conditions the blood is of little differentiating value.

ILLUMINATING GAS POISONING

The blood is bright red from formation of carbonyl hemoglobin. Polycythemia is common. Leucocytosis is high—18,000 to 50,000. The polynuclear neutrophiles are increased.

SUNSTROKE
HEAT EXHAUSTION

Leucocytosis is usually present and varies greatly in degree. The average is 15,000.

SPECIAL INFECTIONS AND CONDITIONS NOT PREVIOUSLY CONSIDERED.

TETANUS

A moderate leucocytosis of the polynuclear neutrophilic type is present. The eosinophiles do not disappear as in most infections.

RABIES

The leucocytes may not be increased until a few hours previous to death. The total leucocytosis varies from 15,000 to 25,000. The polynuclear neutrophiles, however, are relatively increased early in the disease—even during the period of incubation. The neutrophilic cells vary from 80% to 98%.

GLANDERS

A slight leucocytosis, 10,000 to 14,000 exists. The neutrophilic leucocytes average 85%.

ACTINOMYCOSIS

Anemia is pronounced in actinomycocis. The hemoglobin is especially low in proportion to the decrease of red corpuscles. The hemoglobin varies from 25% to 50%. High leucocytosis is almost constant,—20,000 to 30,000. When the liver or lung is involved the leucocytosis is higher than when the lesion is located superficially, as in the jaw. Low leucocyte counts have been noted, however, in actinomycosis of the liver.

PLUMBISM

The most characteristic feature of the blood in plumbism is the pronounced basophilic degeneration of the red corpuscles. The punctate basophila appears even before the anemia is pronounced. The punctate basophilia is of great diagnostic value in differentiating lead colic. Leucocytosis is present.

ANEURISM

Aneurisms do not cause any abnormal conditions of the blood, unless thrombosis or infection takes place. Leucocytosis follows injections of gelatin.

EXOPHTHALMIC GOITER

Graves' disease presents a moderate anemia of the chlorotic type. "Thyroid chlorosis" occurs also in simple hypertrophy of the thyroid gland. Lymphocytosis is frequently present. The eosinophiles are often slightly increased, 7% to 10%.

ADDISON'S DISEASE

Anemia is very well developed. The red corpuscles are reduced to 2,000,000 to 3,500,000. In advanced cases normoblasts, microcytes, poikilocytes and degenerations appear, as in tuberculosis, the leucocytes are normal or a leucopenia exists. Relative lymphocytosis is very common in Addison's disease, but is hardly to be regarded as possessing any prognostic value. Eosinophiles may be slightly increased. Occasionally the basophiles are moderately increased.

(To be continued.)

A CASE OF STRICTURE OF THE ESOPHAGUS TREATED BY GASTROSTOMY AND RETROGRADE DILATATION BY OCHSNER'S METHOD: WITH REMARKS.

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Alice C——, of Macomb City, Miss., aged twenty-two months, was admitted to the white children's service, Ward 62, Milliken Hospital, April 17, 1905.

On March 8, 1905, she had swallowed some concentrated lye, the definite amount not being known. She was badly burned about the lips and the mouth, and sloughs were drawn off from her mouth during the two weeks after the accident.

She was brought to the hospital May 17, 1905. She seemed in considerable distress and her mother told me she swallowed with great difficulty and frequently vomited what she swallowed. She had lost considerable flesh. I tested her ability to swallow and found that she could swallow only liquids, although occasionally a well-soaked piece of cake would reach the stomach. I introduced, with considerable difficulty, a small sound into the stomach. It was not convenient for the parents to leave the child in the hospital at the time, so she was taken home, with her mother's promise to come back with her in a few days. After getting home, however, an attack of bronchitis came on and she remained away much longer than had been anticipated. She did not return to my care until the middle of June, 1905. She was then in a much worse condition, swallowing with greater difficulty and regurgitating more frequently. Attempts to pass the stricture with a sound were unsuccessful, so, the child's condition being very unsatisfactory, I concluded to do a gastrostomy and attempt to retrograde dilatation of the stricture. This was done on June 19, 1905. There was some difficulty in finding the cardiac orifice through an incision made high up in the rectus muscle, so I made an attempt to introduce from the mouth a small whalebone sound with a bulbous end. In this I fortunately succeeded. Having caught up the end and drawn out the sound through the opening in the stomach, I attached a small silk thread to it and pulled it back with the whalebone until it came into the mouth. Then a small rubber drainage tube was caught at its middle by the string and with much stretching of the tube, pulled through to the mouth. This was left in for a few minutes and then withdrawn, although with great difficulty, owing to the tightness of the stricture, necessitating extreme stretching of the tube in order to reduce the size sufficiently to be pulled out. Then one bougie after another was drawn through until No. 17 had been passed. A gastrostomy was then done, leaving the silk cord in place, this being drawn through the tube in the stomach, the two ends being tied together.

On June 23, 1905, the stricture was again dilated by means of the silk cord, a No. 17 French bougie being pulled through.

June 24, 1905. As the valvular character of the opening in the stomach had been lost, the patient was again anesthetized, and the stomach valve reestablished. The stomach, however, was very irritable, necessitating before this the withdrawal of the string, and later the tube had to be withdrawn and a catheter inserted in its place through the gastric opening.

I left the city on this date and did not return until August 10th, at which time I saw her again. I learned that during my absence the stricture was only occasionally passed with a sound, the child's condition being such that she could not stand much manipulation. There was considerable leakage around the tube and this was not controlled until a larger tube was used to plug up the opening. On June 30th the stricture had been again dilated with a No. 17 French bougie. She swallowed water after getting back into the ward from the operating room. The little patient vomited often and soon developed a severe attack of gastroenteritis. The tube was removed. The abdominal wound continued to suppurate for some time, but finally healed. She lost a great deal of flesh, owing to the inability to retain much food. In the latter part of August, after my return, I began with the dilatation again, using the Trousseau dilator with metal tips graduated very closely. As the dilatation progressed she began to take her food and retain it better.

On September 5, 1905, she weighed eighteen and one-half pounds. She was now twenty-seven months of age. From this date the dilatation steadily progressed and her weight gradually increased with the improved nutrition brought about by easier swallowing of better food, less vomiting and, consequently, better digestion and better assimilation. The dilatation was run up steadily from a 17 French bougie in August, 1905, to 28 French in the following spring, the sounds being at first passed every few days, then every two weeks, and afterwards at intervals of three weeks for nearly a year. Her general health improved so remarkably that it would be hard to find a rosier, more vigorous child than little Alice. As she grew and developed it became

necessary to further increase the size of the sounds. For a long time I used the metal olives on a spiral (flexible) stem, covered with a rubber hood, but for some time I have used the long esophageal gum bougies. No. 30 French now passes easily, so that the dilatation is done only at intervals of two months or more. She rarely vomits, hardly more than the average child. While this child cannot be considered cured, for experience teaches that contraction may still go on, still the effect of the dilatation has been so evident that I believe there will be no difficulty in maintaining a practically normal lumen of the esophagus by the passing of a properly gauged sound several times a year.

The result of treatment in this case has been so satisfactory, and the method of Ochsner withal so appeals to the practical surgeon, that I feel it has not been amiss to advocate it here. For stricture below the isthmus, I believe that no procedure can justly take its place. Of course, in most cases where a sound or filiform can be passed into the stomach from the mouth, this method of retrograde dilatation is not fast enough and the nutrition fares badly. But, certainly in the type of cases represented by that now reported, it would seem futile to persist in an attempt to dilate under such difficulties as were presented before the stomach was opened.

In most cases, as is attested by such competent surgeons as Mayo, it is almost impossible to find the cardiac opening by manipulating through the gastric fistula; in such cases, after the esophagus has had a prolonged rest from the irritation of passing food, another attempt should be made to pass the stricture from the mouth. Often it will happen that under the influence of this rest and the improved nutrition resulting from the better feeding through the fistula, the conditions in the esophagus change and a sound will pass, or, as in Hagenbeck's and other cases, a shot tied to a thread may be swallowed to find its way into the stomach, where it might be fished out through the gastric fistula, and the bow-string method of Abbe or the rubber tube method of Ochsner be carried out. Now and then a case may be encountered in which all efforts to pass the stricture with a sound or filiform from the mouth or stomach fail. In such cases we still have the resort of external esophagotomy for the purpose of facilitating the passage of a filiform through the stricture from above. This opening being nearer to the stricture and the esophagus being straighter from this point, one may often succeed in getting something through the stricture from this opening when there would be no chance through the mouth.

Not wishing to run the risk of wearying you by too long a paper on a subject that has been so thoroughly written up by such men as von Hacker in von Bergmann's surgery, Maylard, W. J. Mayo, and many others, I shall close this report by the following summing up:

In all cases where such irritant liquids as lye have been swallowed, systematic sounding should be resorted to as soon as practicable, say in from two to three weeks.

In some cases, as suggested by Mayo and others, where there has been such traumatism as to preclude the giving of proper nourishment, especially where rectal alimentation is not satisfactory, immediate gastrostomy will be demanded to stop the irritation and to provide for nutrition.

The location of the stricture will usually suggest the method of operative treatment; if high up, external esophagotomy with immediate dilatation may be resorted to; if low down in the esophagus, retrograde dilatation from the stomach to mouth, or to an esophageal opening, will usually be the preferable procedure, it being always borne in mind that none of these methods is admissible until simple dilatation from the mouth has been tried and found wanting.

As to the method of retrograde dilatation, it may be said that gradual dilatation by simple passing of sounds from the stomach through the stricture should first be tried; this failing, the string method of Abbe or of Ochsner should be carried out in preference to any cutting operation within the esophagus.

The use of the umbrella catheter will be found to facilitate all these retrograde manipulations, because it will enable the operator to employ a less circuitous route into the stomach, the umbrella making it impossible when properly managed for any gastric contents to escape.

The passing of sounds must be kept up occasionally for many months or even years, as it is difficult to say when a stricture of the esophagus may be said to be cured.

Should a stricture prove to be impassable by any of these methods, provision for a permanent gastric fistula by one of the valvular methods must be made.

GALL-STONES.

The gall-stone that is quiet in the gall-bladder or in the bile-ducts cannot be influenced by any medicinal treatment. There is no solvent for gall-stones, and there is no medicinal means for removing them. —JOHN H. MUSSER in *The Therapeutic Gazette.*

REPORT OF A CASE OF UNUNITED FRACTURE OF THE SHAFT OF THE HUMERUS AND PARALYSIS OF THE MUSCULOSPIRAL NERVE.

DUNCAN EVE, M.D.,

NASHVILLE, TENN.

Mr. R. S. K., of Bowling Green, Ky., thirty-one years of age, has always been stout and healthy; not having had any sickness of any kind since childhood. He was knocked down on the 29th of March, 1905, and claims his right arm was run over by a heavy vehicle, producing a fracture of the shaft of the humerus in the middle third. As we found the fracture simple and quite oblique in its line, we are disposed to believe it was produced from an indirect force, and not from the direct force of a wheel passing over the member, as he thinks, in which event the fracture would be apt to have been a compound or comminuted one. The injury was, we understood, treated by immobilization in the ordinary way, when, after due time, it was found the bone had failed to unite. After using friction or rubbing the ends together, counterirritants over the seat of fracture, etc., it was again immobilized by a splint, all to no advantage in the accomplishment of union, and on the 24th of April, 1906, an operation was performed, consisting of an approximation of the oblique ends and holding them with a silver wire suture, the arm being thus the third time immobilized in plaster of Paris for seven weeks.

Soon after this operation, musculospiral paralysis developed. We found upon examination that the patient had a wrist-drop and was unable to extend the fingers or to supinate the forearm. There was paralysis of the triceps and complete loss of sensation in the lower half of the outer and anterior aspect of the arm, and in the middle of the back of the forearm, as far as the wrist. Furthermore, the bone had failed again to unite and there was the greatest possible mobility noticed in every effort to move the arm.

On March 2nd last, at our Infirmary, in the presence of Dr. W. R. Francis, of Bowling Green, Ky., and with the assistance of my brother, I made an incision in the middle of the external aspect of the arm, freeing the fragments so that an inspection could be made of all the parts. We found that the silver wire used to encircle the oblique ends of the bone also enclosed the musculospiral nerve, with strangulating pressure, the nerve being partially displaced from its groove. This explained the paralysis.

The oblique ends of the upper and lower fragments were excised and approximated. The apposed ends were held in place by a device especially made for us, which consisted of a silver plate or cleat, one and three-fourths of an inch long, three-fourths of an inch wide, and one-twenty-fourth of an inch thick, contoured so as to fit the round surface of the bone, and with two perforations at each end to receive half-inch silver screws, which, after drilling smaller openings in the bone than the size of the screws, were driven in as a nail, and thus the freshened ends of the bone secured firmly. Our attention was next given to the nerve. Having shortened the bone, we determined to excise the nerve, which was almost severed by the wire suture. We removed at least an inch, and by an end-to-end fine silk mattress suture united the parts remaining, placing the nerve back as near as possible in its groove, which had first to be relieved of fibrous material that filled up part of its extent. Drainage was provided for, the external wound closed with interrupted sutures, the wound dressed, and the arm and forearm placed on an internal rightangled splint, so as to thoroughly immobilize the whole upper extremity.

As a rule, the humerus is more subject to nonunion than any other long bone. Treves believes this is due to the entanglement of muscles between the fragments, lack of fixation of the shoulder joint, and imperfect elbow support. Hamilton believes it is due to the fact that the elbow soon becomes fixed at a right angle on an internal right-angled splint as well as the arm. We would like to state that we have a record of having had but one case of ununited fracture of the humerus where we had charge of the case from the inception of the fracture.

We are glad to report, though only five and a half weeks from the time of the operation, that the prospect in this case is good for a perfect union of the bone, having had no suppuration from the wound, and, further, that the musculospiral paralysis shows every indication of relief. It is true, that while sensation has returned, motion is not yet complete, but improving every day, the time being too short for normal return of function. We can feel the developing callus at the approximated ends of the bones, and have already begun passive movement of the elbow, which will be increased at every dressing, and expect to dismiss the patient in about ten days' or two weeks' time as cured.

American Journal of Surgery

PUBLISHED BY THE

SURGERY PUBLISHING CO.

J. MacDONALD, Jr., M.D., President and Treasurer

92 William Street, N. Y., U. S. A.

to whom all communications intended for the Editor, original articles, books for review, exchanges, business letters and subscriptions should be addressed.

SUBSCRIPTION PRICE, ONE DOLLAR
FOREIGN, SIX SHILLINGS

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, MARCH, 1908.

CONSERVATIVE SURGERY IN SARCOMA OF THE EXTREMITIES.

It is not a great many years since all sarcomata of the extremities were treated by high amputation. Gradually there developed the knowledge that certain varieties of sarcoma, of a relatively benign character, require only local extirpation. But for the malignant types of sarcoma of the extremities the text-books still teach the treatment by high amputation, in spite of the fact that it seldom effects a cure.

It is now generally recognized that sarcomata vary in their malignancy, as a rule, according to their histologic structure. They may be *roughly* divided, prognostically, into two classes: First, the relatively benign myxosarcoma and giant-cell bone sarcoma, which may not recur after a single extirpation or thorough curettage, or which, recurring locally, are ofttimes cured after repeated extirpation or curettage. Second, the spindle-cell and round-cell and, especially the small round-cell sarcoma, usually very malignant, and in most cases fatal despite high amputation.

In an editorial on this subject (contributed by C. A. Elsberg), in the June, 1905, issue of the AMERICAN JOURNAL OF SURGERY it was suggested, since it was common surgical experience that patients with these malignant varieties of sarcoma of the long bones almost always succumb to distant metastases in spite of early high amputation or exarticulation, that wide extirpation of the growth would perhaps effect as many permanent cures, and it would preserve to the patient a more or less useful extremity. It is interesting to note in recent surgical literature a distinct tendency in that conservative direction. We would call our readers' attention to the abstracts, on page 91, of the articles by Bloodgood, and by Babcock and Pfahler, as illustrative of this tendency.

In connection with the less mutilating treatment by extirpation, or, where that is not feasible, by amputation just above the growth, we have certain auxiliaries to treatment: Coley's toxines, the x-ray and radium. In no given case can one postulate which, if any, of these or other more or less experimental adjuvants will be helpful in preventing recurrence; but they deserve continued trial and careful observation.

In passing, we may note, with satisfaction, Bloodgood's expression of the opinion that the term "osteosarcoma" should be limited to those (periosteal) sarcomata characterized by the production of new bone. There has been some confusion in the use of the word. By many it is employed, generically, for all bone sarcomata; while in some text-books we find it applied to medullary growths, in which connection it is certainly not descriptive.

THE PROGNOSIS IN X-RAY STERILITY.

In the April, 1905, issue of the AMERICAN JOURNAL OF SURGERY, F. Tilden Brown and Alfred T. Osgood, reported at length on their then recent observation "that men by their presence in an x-ray atmosphere incidental to radiography, the therapeutic use of, or testing of tubes, may after a period of time be rendered sterile." Their report related to eighteen x-ray workers, all those of whom who had been extensively exposed for a period of three years or more showing complete azoospermia, while a few who had been less exposed and had been engaged in the work for a shorter time, showed varying states of oligo-necrospermia. In all the cases the sterility had appeared "without the slightest subjective or objective sign denoting its insidious development." The authors pointed out that the sterility is the result of a specific destructive action of the x-ray upon the spermatogenetic cells, and that this action is cumulative. The question of prognosis was left in abeyance. The observations of Brown and Osgood in human subjects (and the earlier experimental

production of sterility in rabbits by Albers-Schoenberg) have been repeatedly confirmed, and the sterilizing effect of the x-rays upon individuals repeatedly exposed, without protection, is universally accepted.

It is interesting at this date, nearly three years after, to note the condition of those upon whom Brown and Osgood based their first report.' In the issue of *The American Journal of Urology* dated October, 1907, Brown and Osgood report that of fifteen cases of azoospermia noted in 1905, nine still show azoospermia, two have recently shown large numbers of motile, normal-appearing spermatozoa in their seminal fluid, in two a very few spermatozoa could be found, and the remaining two have given no opportunity for examination. The three cases of oligospermia reported in 1905 are apparently normal now. With this article are presented photomicrographs of a section from the normal testis of a white rat and of a section from the testis of a white rat "after quite long exposures to x-rays" which latter "will demonstrate why it is that restoration of normal structure and normal function in a part of the organ so changed is inconceivable. All of the several layers of spermatogenetic cells have disappeared —a few scattered nuclei and a few of the cells of the lowest layer persist—the rest are broken down into débris and viscid fluid."

The deductions from this report would seem to be: 1. The prognosis for the return of fertility after complete azoospermia following repeated exposures to the x-ray over a long period, is probably bad, but a longer time of observation than that thus far elapsed, is needed to determine this definitely. 2. There may, after a time, be a return of a larger or smaller number of motile spermatozoa in the semen of those who have suffered from repeated exposures. 3. There is no estimation of the amount of exposure necessary to produce lasting azoospermia. In cases that have recovered it is to be assumed that some of the spermatogenetic cells escaped total destruction. 4. There is probably individual variation in the reactibility of these cells to the blighting influence of the x-rays. [Some x-ray workers who have undergone "considerable exposure" have escaped the development of azoospermia.] 5. Exposures wilfully undertaken to effect sterility would have to be continued over a very long period to insure its lasting production.

Other data deserve to be added: X-ray azoospermia may be, and perhaps usually is, associated with more or less testicular atrophy, and the degree of this atrophy not unlikely has some prognostic value. Even this atrophy, however, is not accompanied by deterioration of sexual activity, so far as has been noted. X-ray workers who have had a return of motile spermatozoa after a period of azoospermia, have, in one or two instances, become parents. It will be of interest to note through the next few years whether or not their progeny will show any deterioration.

Surgical Suggestions.

One is wise in making assurance doubly sure by tying each fascial suture with three knots instead of two.

The tension on the sutures after an operation for epigastric hernia may be relieved by placing a pillow under the knees and propping the patient up in bed.

One should watch carefully for overdistention of the bladder in all cases of lesions of the spinal cord. In children the bladder has been known to distend sufficiently to hold 20-40 ounces.

A swelling in the inguinal region, painful to the touch is, of course, often an inguinal adenitis (*e. g.*, following gonorrhea). But orchitis in an undescended testicle should be kept in mind.

To determine how soon a patient's mucous membrane, *e. g.*, of the mouth or urethra, becomes insensitive after the application of cocain, or other anesthetic, the surgeon may employ the device of touching a little of the same solution to his own tongue, just after the application to the patient.

In the case of a urethro-vaginal fistula, the vaginal opening can readily be discovered by the injection of methylene blue into the bladder and noting its escape through the vagina. If, however, the opening communicates with the ureter, the blue colored fluid cannot be seen. In such a case, a catheter at times can be passed directly from the vaginal opening into the ureter.

A peripleuritic abscess due to caries of a rib may give all the signs and symptoms of an encapsulated empyema. Aspiration of the chest usually withdraws clear fluid (an effusion due to the inflammatory process). A positive diagnosis can be made only by exploration of the abscess cavity, when a necrosed rib may be found overlying a thick-walled abscess cavity.

Book Reviews.

A Text-Book of Minor Surgery. By EDWARD MILTON FOOTE, A.M., M.D., Instructor in Surgery, College of Physicians and Surgeons (Columbia University); Lecturer on Surgery, N. Y. Polyclinic Medical School; Visiting Surgeon, N. Y. City Hospital and St. Joseph's Hospital; Consulting Surgeon, Randall's Island Hospitals and Schools; formerly Chief in Surgery, Vanderbilt Clinic. Octavo; 752 pages; 407 engravings from original photographs and drawings. New York and London: D. APPLETON AND CO., 1908.

There is a distinct need for this book. As the author states in his preface, in the text-books of surgery "the more serious surgical conditions are exhaustively discussed, while the treatment of the lesser ailments . . . . . is condensed into a chapter or two, in which methods of treatment long since outgrown still find their place. And yet this neglected field of minor surgery is the only one into which the average practitioner will ever enter, and is also the one in which most surgeons will find the majority of their patients." We are also quite prepared to agree with him that "more bad surgery is performed upon the hand than upon the organs of the abdomen."

The title of this work should not allow one to confuse it in his mind with the more familiar students' quiz-book on "Minor Surgery and Bandaging." This is in every sense a text-book, indeed a dignified treatise, covering almost the entire field of minor surgery, general and special. We say "almost" because we have noted the omission, no doubt through inadvertence, of several subjects.

It is no disparagement of the excellent text to say that the most striking feature of the book lies in the approximately four hundred original photographs reproduced in it. These are uniformly excellent and brilliantly descriptive; and the ample caption under each enhances their value. They represent, no doubt, many years of patient effort and observation.

The subject-matter of the work is divided regionally. This classification has advantages in a book covering only a certain grade of diseases, but it also has certain disadvantages: It involves more or less repetition; and it dissociates the general considerations of some affections from the discussion of various varieties of those affections. Thus, *fractures in general* is discussed on page 363, and *fractures of the humerus* follows (on page 371), but *fracture of the fibula* is treated of on page 502. *Carbuncle* is discussed under the heading of, and only as it occurs on, the neck; yet it is not entirely peculiar to that region, of course. This discussion of carbuncle is, indeed, altogether too brief, both as to operative attack and clinical features. There is no mention of its occurrence as a complication of diabetes. Indeed, the index refers to diabetes under the single caption of diabetes in pruritus, page 261, although we also find it spoken of in connection with gangrene, page 513, and perforating ulcer, page 530.

The author wisely did not yield to the temptation naturally afforded by his subject to deal too exhaustively with fractures; as a special subject this is covered in works occupying more space than this book could logically spare. He presents, however, the essential facts in diagnosis and treatment in clear and succinct fashion. It is a little surprising that among his wealth of splendid photographs we find so few illustrating fractures and fracture dressings. He states that fracture of the metatarsal bones is almost always due to direct violence. He makes no reference to fracture of the base of the fifth metatarsal by indirect violence. Nor does he call attention, as he should, to the fact that fracture of a metatarsal is often the cause of pain or swelling of the foot following comparatively slight violence (fuss geschwulst).

Fracture of the carpus is too briefly dealt with.

Fracture of the femur, the author very properly states, is a major surgical condition and it is therefore not discussed. Fracture of the femur in infants, however, can be and usually should be treated in ambulant fashion, and it might logically be included in this work.

The sections on infections of the hand, and especially that on tendon sheath infection, are most excellent. Their reading will not be wasted time even for an experienced surgeon, and they will, we think, properly discourage the unqualified man from attempting to deal with conditions which, never trifling, so often appear temptingly simple in their incipiency.

Ulcer of the leg, which, with finger infections, constitutes so prominent a part of surgical dispensary work, is likewise discussed at considerable length. The author clearly lays down the essential considerations in treatment, and emphasizes the importance of thoroughness, patience and great care. He makes no reference, however, to Unna's zinc-gelatine dressing, which is so often effectual in certain cases that resist other treatment and, especially, in patients who cannot apply frequently for change of dressings.

The clinical features and surgical treatment of *mammary abscess*, also so common an affection in surgical dispensary practice, are by no means sufficiently discussed; and here also the author's helpful photographs are missed. He does not mention the use of the very small incision and Bier's suction cup in the treatment of breast abscess. Indeed, we do not find a single reference to Bier's hyperemia in the book, in the treatment either of acute infections or chronic joint affections. We are surprised that acute and chronic *mastitis* (non-suppurative) are not even mentioned!

The chapters on *minor surgical technic* and on *the roller bandage* are excellent. We do not understand why the author suggests four or five yards of silk ribbon at twenty cents a yard, to make a black bandage, when vastly cheaper black bandages of gauze can be purchased at the drug store, ready-made.

We shall not attempt a description of all the other sections of this volume, which we find of such excellence that we would, rather, point out some of its shortcomings—not in a spirit of fault-finding, but rather in that of suggestion, since we feel sure that so unique a work will soon demand a second edition.

Tuberculous adenitis of the neck is, perhaps, discussed at sufficient length, but subacute and chronic cervical adenitis of other origin—a most important subject—is barely more than hinted at. Pectoral adenitis, not uncommonly developing from infections about the waist line, as from a corset, is not mentioned, nor is subpectoral abscess. Under acute *torticollis* we find no suggestion of cervical adenitis, dental caries or other occasional etiological factors. There is reference to removal of a foreign body from a bronchus by bronchotomy, but none to bronchoscopy—although both are major operations.

We do not find a word about blank cartridge wounds or tetanus! *Syphilitic dactylitis* is treated under that heading, but tuberculous dactylitis is discussed only incidentally on page 443, under the general heading *tuberculosis of joints*. It is also mentioned, on page 438, as one of the conditions from which specific dactylitis is to be differentiated. In this connection the author suggests a radiograph, but he does not say what, as differentiating features, the radiograph would show. His work would have added value if he had introduced, either as a separate chapter or otherwise, a discussion of the use of the x-ray in minor surgery, the differentiation by skiagraphic details of various inflammatory, malignant and traumatic bone and joint affections, and the radiographic methods of localizing a foreign body.

Neither under the heading of *painful heel* nor elsewhere can we find any suggestion that gonorrhea is a cause of painful foot. Tabes is not mentioned under *perforating ulcer*. Talipes is not discussed (nor is there mention of tenotomy of the Achilles tendon) and yet this subject belongs, in part, within the realm of minor surgery.

The treatment of *gonorrheal arthritis* as outlined on page 434 and again on page 534 is too sketchy. There is no reference to treatment by serum, stasis hyperemia or internal medication. The treatment of tuberculous joints is is only outlined, no doubt because the author regarded this as an essentially major, albeit often ambulatory, surgical affection, deal with sufficiently in other text-books.

Erythromelalgia is not described. There is no reference to the minor surgical complications of typhoid fever. In fact, perhaps because of an effort to keep strictly within

the limits of minor surgery, Foote has failed to give to his work the broad basis in diagnosis that it should have. Minor surgical conditions cannot always be recognized as such except by differentiating them from more serious ones. Thus there should have been included in such a book descriptions of the recognition of Charcot's joint, pathological fracture, and a variety of other local and general conditions that may simulate or complicate minor surgical ailments.

Typographically and stylistically, the volume is very attractive. *Fenestrum,* so spelled repeatedly on page 707, and in the index (which is not as good as it might be) should, of course, be *fenestra;* and *fenestra,* used as plural, should be *fenestrae.*

Dr. Foote has prepared a useful book in a capable manner. We do more than merely commend it; we urge its value to all those who are not experienced surgeons, and who do not limit themselves strictly to medical practice.

Hospital Training-School Methods and the Head Nurse. By CHARLOTTE A. AIKENS, late Director of Sibley Memorial Hospital, Washington, D. C.; late Superintendent of Iowa Methodist Hospital, Des Moines, and of Columbia Hospital, Pittsburg; Associate Editor of *The National Hospital Record.* Duodecimo; 267 pages. Philadelphia and London: W. B. SAUNDERS COMPANY, 1907.

As the "hospital problem" has developed, so there has coincidently developed the "training school problem"—the rational study of the management of nurses' training schools, the curriculum and methods of teaching, and the ethical and sociological considerations involved. In the discussion of this "problem" this little book is a valuable contribution, as it is also, indeed, a pioneer. It has little in common with text-books of nursing, manuals for operating-room nurses, etc., although it touches on the subjects contained in such works, from other standpoints—viz, those of teaching and of general administration.

The work provides good reading for any nurse interested in the broader aspects of her profession; but it is intended chiefly for training school superintendents and "managers," and head nurses.

The three-years course of study is carefully laid down, with especial regard to the methods of teaching, the conduct of examinations and reviews, the relation of teacher to pupil nurse, etc. The author also indicates wherein attempts to teach too much must be avoided. She also suggests that, within certain limitations, the undergraduate might be allowed to "specialize." The value of lectures in the ethics and sociologic relations of nursing is emphasized. These pedagogic principles and data occupy the first part of the book.

The second part of the work relates to The Head Nurse, and contains chapters dealing with her responsibilities, and her relations with patients, assistants and physicians, hospital ethics and discipline, ward housekeeping and general management, orders and reports, the night supervisor, the operating-room nurse, etc. While these chapters contain many useful hints, they are written not as a manual of detailed instruction, but rather from the broad standpoints of ethics and general administration.

We commend this small book, not only to nurses, but to all physicians actively interested in hospital methods.

Nouveau Traité de Chirurgie, *Publié en Fascicules sous la Direction de* A. LE DENTU *et* PIERRE DELBET. VI. **Lésions Traumatiques des Articulations.** Par LÉON CAHIER, Medecin Principale de l'Armée, Professeur Agrégé du Val-de-Grace. Octavo; 136 figures in the text. Paris: J. B. BAILLIÈRE ET FILS, 1908.

Volume VI deals with sprains, wounds of joints, and dislocations. According to the author, the x-ray has put joint pathology upon a different basis, largely doing away with the necessity of the former careful study of symptomatology and diagnosis, and ushering in an era of surgical intervention. The recent frequent wars have enabled military surgeons to arrive at new and clearer conclusions as to the treatment of wounds, while expert testimony in damage cases has necessitated a different view-point in the analysis of the etiology of joint injuries.

Each of the subdivisions mentioned above, begins with a general chapter and then takes up the consideration of special joints. Neither the spinal column nor the pelvis, however, is mentioned. The bibliography is abundantly quoted, but as in the other already published volumes, the illustrations are inadequate. X-rays are portrayed by rough and ready outlines, and most of the illustrations are almost schematic. A few are borrowed from old favorites, such as Bigelow, Farabouef and Albert. The text is clear, concise, well arranged and instructive.

Treatise on Diseases of the Skin; for the use of advanced students and practitioners. By H. W. STELWAGON, M.D., Ph.D., Professor of Dermatology in the Jefferson Medical College, Philadelphia. *Fifth Edition,* revised. Octavo; 1,150 pages; 267 illustrations in the text, and 34 full-page colored and half-tone plates. Philadelphia and London: W. B. SAUNDERS COMPANY, 1907. Cloth, $6.00 net; half morocco, $7.50.

It is unusual to meet with a text-book that is as satisfactory in all essentials as the volume before us. The author has wisely embraced in the exposition only the necessary facts that will enable the practitioner to gain a clear picture of the disease. The book is therefore happily free from that academic taint so common to many text-books. Especial attention has been paid to diagnosis and treatment. In the latter division, the author has included his own valuable experiences as well as the measures recommended by others. We have noted no evidences of lack of "up-to-dateness" on the part of the author. References to recent dermatological literature are given in full. In regard to illustrations and typography, there is nothing to be desired.

A Text-Book of the Practice of Medicine. By JAMES M. ANDERS, M.D., Ph.D., LL.D. Illustrated. *Eighth Edition,* revised. Octavo; 1,317 pages. Philadelphia and London: W. B. SAUNDERS COMPANY, 1907.

A text-book that has reached its eighth edition within a period of ten years requires no word of commendation on our part. No book could create such a demand unless it possessed unusual merits. These merits are apparent even upon a superficial perusal of the book. The type is large and clear; the text is concise, systematic and, with few exceptions, thoroughly modern, all controversial points have been eliminated or succinctly summarized. The exposition, considering the space limitations, is remarkably full, especial attention, we are pleased to note, being paid to therapy. Finally, the author reveals himself to be a well-balanced clinician with strong conservative leanings.

It is only to be expected that in the course of a more careful reading, a number of items will be found concerning which criticism might be made. It is only fair to say, however, that these are not so much errors in fact, as in personal differences in opinion. For instance, there is no mention of the open-air method of treatment of pneumonia, the Bier treatment of gonorrheal synovitis, the Solomon and Gluzinski tests for gastric carcinoma, the use of tuberculin for therapeutic purposes or the diagnostic value of basophilic degeneration of the leucocytes in lead poisoning. We also note that several important clinical entities have been entirely omitted from discussion; there occur to us, as instances, diverticulitis of the large intestine, hernia of the lung, paralysis of the phrenic nerve, thrombosis of the inferior vena cava, and hour-glass stomach. Status lymphaticus is inadequately described. The book is remarkably free from typographical errors. Lanear, however, should be Lazear on page 91, Litton should be Litten on page 906, and cystitis should be cystinuria, on page 996.

Tuberculosis as a Disease of the Masses and How to Combat It. Prize Essay by S. A. KNOPF. Fourth issue, revised and illustrated. Published by FRED P. FLORI, 514 East 82nd street, New York; also for sale by "CHARITIES AND THE COMMONS," 105 East 22nd street, New York City. Paper binding, 25 cents.

It is a pleasure to greet this familiar prize essay again. We trust that it will continue its efficient use as a popularizer of the hygiene and treatment of tuberculosis for many years to come.

Progress in Surgery.

A Résumé of Recent Literature.

A Conservative Treatment of Sarcoma. W. W. BABCOCK and G. E. PFAHLER, Philadelphia. *Surgery, Gynecology and Obstetrics,* February, 1908.

The radical treatment of sarcoma has been unsatisfactory. The relatively benign forms such as central bone sarcoma, giant-cell sarcoma and some fibrosarcomata may be cured by simple excision or curettage, while the very malignant, such as periosteal sarcoma of long bones, melanotic and small round-celled sarcomata cause death even after amputation at a high level. Early and radical removal does not seem to be of the same avail as in carcinoma. On the other hand, sarcomata show considerable tendency to disappearance, either spontaneously, after x-ray treatment or after injections of toxines or suppuration. Trauma exerts a remarkable localizing effect on sarcoma; especially is this true of operative trauma; therefore sarcoma recurs *in the scar* no matter where the amputation is performed.

Operative trauma should therefore be limited as far as possible to the immediate field of the sarcoma so that recurrence may not be invited at a new or distant point. The sarcoma cachexia is not due to the metabolic products of the neoplasm as in cancer, but rather to the necrotic processes in the tumor. The authors, therefore, advocate judicious intracapsular enucleation, massive and prolonged Roentgenization and the topical application of methylene blue or pyoktanin and occasionally the internal administration of certain drugs or toxines. Numerous interesting illustrative cases are submitted.

Conservative Operations on Bone Tumors, Based on the Clinical and Pathological Study of Their Relative Degree of Malignancy. J. C. BLOODGOOD, Baltimore. *Journal of the American Medical Association,* February 1, 1908.

From a study during many years, of patients treated in Dr. Halsted's surgical clinic at the Johns Hopkins Hospital, of those in his own practice, and of others communicated to him by colleagues and collated by him from the literature, Bloodgood has found that, with rare exceptions, the cases of bone tumors in which the patients recovered without amputation had a similar pathology, while in those that cannot be thus cured, the pathologic anatomy is different. In this latter group, in spite of high amputation, the patients succumb to internal metastases. He reviews the tumors for which the extent of the operation is governed by the local growth, and for which amputation is indicated only when the necessary local resection would leave the limb without function. When amputation is required for a local growth the highest point need not be selected. The first mentioned are the bone cysts of which there are two varieties: The dentigerous cysts of the jaw, and the form usually seen in the medullary cavity of the long pipe bones, rarely in the short and flat bones, and differing from the dentigerous cyst in having no connective tissue capsule. The dentigerous cyst needs only the removal of the membranous lining for its cure; the other form can only be diagnosed by an exploratory incision, but curetting and drainage will accomplish its cure. The adamantine epithelioma cannot be distinguished clinically from the dentigerous cyst when it occurs in the bony cavity of the jaw, nor from epulis when it begins under the alveolar mucosa. At the exploratory incision it can be distinguished from the dentigerous cyst by coarse white granular tissue filling its cavities. The tumor should be completely excised, but one can keep close to it. When it occurs as epulis, local removal with excision of the alveolar border of the jaw only is necessary. The rare medullary fibroma may be looked on as a solid bone cyst. It is not malignant, and a conservative operation is sufficient. Giant-cell sarcoma usually starts in the medullary cavities of the long bones, though periosteal growths have been recorded. It is the most common form of epulis. Cases have been cured by simple curetting, and when recurrences have followed, they have sometimes been eradicated by a second operation. In over a hundred cases of the pure tumor none has given metastasis. It seems justifiable, therefore, first to try conservative methods with this growth. Surgeons should acquaint themselves with the characteristic appearances of this growth if they wish to cure tumors with the least possible mutilation. Pure myxoma is rare; Bloodgood has seen but one case. Its treatment is the same as that of a giant-cell sarcoma. Pure enchondroma is readily recognized; it is benign and local resection suffices. Bloodgood has been surprised at the good effects of complete removal in myxochondrosarcoma; metastasis is rare but possible. Curetting should never be employed, but local resection is justifiable. It is common in the maxillary antrum. Bloodgood thinks that the name osteosarcoma should be applied only to bone tumor associated with new bone formation, and this is seen, to any extent, only in periosteal growths, occurring most commonly on the lower jaw. In his experience, none of the cases has given metastasis. Local resection should be the operation. He has observed periosteal fibroma only on the jaw; local excision is sufficient. Exostosis bursata is a benign growth, which may be mistaken for a sarcoma, but exploratory incision reveals its nature. Lipoma springing from the periosteum may cause similar mistakes.

The more malignant sarcomata of bone are fatal in spite of high amputation performed in many cases, even a few weeks after the first symptom. Death is due to metastasis, usually to the lungs. These comprise the various forms of the round and spindle-cell tumor and the angiosarcoma, chiefly the perithelial. The importance of urine examination in bone tumor is insisted on. In the multiple myeloma of bone, Bence-Jones bodies are present and their discovery might, in case of merely localized symptoms, prevent the diagnosis of a single tumor and cause a needless operation in this hopeless disease. Myeloma in its early stage resembles giant cell sarcoma or bone cyst. It is important to remember, also, that benign bone cyst, itself, may be a multiple lesion. The cases thus far recorded have been associated with osteomalacia. Multiple giant-cell tumors have been observed in a case of ostitis deformans by Rehn.

Factors which Influence the Permanence of Cure in Operations for Cancer of the Breast. W. D. HAGGARD, Nashville. *Journal of the American Medical Association,* January 25, 1908.

The factors that unfavorably influence the prognosis of cancer of the breast are reviewed by Haggard, who especially calls attention to the importance of not neglecting any tumor, however small, in this situation, and the value of explanatory operations in such cases. He blames practitioners for the too common advice to wait. There is nothing more simple, he says, than the microscopic examination of a lump in the breast. The tumor, if small, can be easily removed through a slight incision, and if large, a portion can be removed and sent to a pathologist for examination, the wound being left open, with two or three provisional sutures, and packed with Harrington's solution or alcohol to prevent any of the cancer cells from wandering into the bloodvessels. Unfortunately, the surgeon seldom sees these patients early enough and when operation is required it must be extensive to include all the possible lymphatic routes of infection. He sums up the contraindication to operations as follows: 1. Fixation to the chest wall. 2. Extensive axillary involvement when all the structures are fused. 3. Enlargement of the supraclavicular glands, which are secondary groups. 4. The "pig-skin" edematous lymphatics over the breast signifying that all the routes of lymph return are blocked. 5. Multiple shotlike nodes in the skin commonly seen after osteopathic treatment, which bruises the vessels and spreads the cells over the chest with the formation of infected nodes. 6. Suppuration of the cancer itself (the only operative fatality in his series occurred in a case of this character). 7. Cachexia. The x-ray treatment is advisable, he states, after fixation, especially in advanced cases. While it does not kill cancer, except in very superficial forms, it will produce a higher type of local resistance, will contract lymphatics and will deposit fibrous tissue in and about the glands, thus delaying the progress of the disease.

Adenomata and Cysts of the Parotid (*Adénomes et Kystes de la Parotide*). P. LECÈNE, Paris. *Revue de Chirurgie*, January, 1908.

The author, in an analysis of all reported instances of adenoma of the parotid, was able to find but five authentic cases. His own observations were gathered from a study of one case of adenoma and of three cases of cyst of the parotid. The adenomata resemble the mixed tumors in many respects. Their size varies from that of an almond to that of a hen's egg; they are usually situated just in front of or below the tragus of the ear. There is nothing in their macroscopic appearance or in their clinical history which serves to differentiate them absolutely from the mixed tumors. As regards the cyst, Lecène is inclined to the view that they are not developed at the expense of the glandular tissue of the parotid, but that they owe their origin to embryonal inclusions probably derived from the branchial clefts.

The Toxic Effects of Urotropin. J. G. BEARDSLEY, Philadelphia. *Therapeutic Gazette*, January 15, 1908.

The author reports three cases of hematuria arising after the administration of therapeutic doses of uratrapin, and finds many similar instances reported in the literature. He believes, therefore, that urotropin is not by any means the harmless drug that physicians have been led to believe, and advises careful observation of the urine in every case in which it is administered.

The Antimicrobic Action of Bromin. G. C. KINNAMAN, Chicago. *Journal of the American Medical Association*, February 1, 1908.

Kinnaman reports the results of experiments made *in vitro to* test the antimicrobic efficiency of bromin. The following organisms were employed: Bacillus prodigiosus, B. anthracis and spores, B. tuberculosis, Staphylococcus pyogenes aureus, Streptococcus pyogenes, Blastomyces dermatidis, Actinomyces bovis. In order to approach as nearly as possible conditions in the tissues, solid media were employed exclusively and a large number of tubes was used. The final deductions are given substantially as follows: 1. In a solution of bromin we have a germicidal agent that has a peculiar selective action for certain groups of microorganisms and that acts more or less indifferently toward another group. On cocci and fungi a 1 to 300 solution exerts a marked germicidal action, but on bacilli, especially spore-forming ones, its action is disappointing, a 1 per cent. solution having to act for a considerable period of time before causing death. 2. It differs from an ideal antiseptic in that (a) it is hard to prepare, being very irritating to the eyes and mucous membranes; (b) it is very unstable, having to be kept in a glass retainer, and even then it gradually loses its power and fresh solutions are required; (c) it is not markedly penetrating; (d) it has to act for a considerable time to be effective on all microorganisms; (e) it coagulates albumin. 3. It approaches an ideal antiseptic in that (a) it is non-toxic and non-irritating in effective strength; (b) it does not produce an appreciable stain. 4. Lastly, it is needful to state that in order to be effective on all classes of microorganisms a 1 per cent. solution must be used for the period of one hour.

The Surgical Value of Iodin. W. T. DANNREUTHER, New York. *Medical Record*, January 25, 1908.

Danreuther believes that the value of iodin has been unappreciated in surgery. The author has used it extensively in all varieties of surgical work and speaks of the results that he has achieved in enthusiastic terms. For disinfecting wounds he applies the tincture; dirty wounds of the scalp, for instance, will heal by primary union if sutured after the application of iodin. Painted over a lymphangitis it is a sovereign remedy. The author has had excellent results in the treatment of erisipelas, indolent granulations and sloughing wounds. In major surgery, iodin has been employed for purposes of sterilization of the hands, disinfection of the skin (especially the umbilicus) before laparotomy and the preparation of catgut. The author has found iodin (solution of one-half drachm of the tincture to two pints of water) in the treatment of gonorrhea of females better than any remedy that he has ever employed. He has also used it after curettage and after labor to prevent infection and post-partum hemorrhage. The author describes its use in bubo and for the injection of hydroceles.

[From our own somewhat extended observations during the past few years we can confirm, in a large measure, the experience of the author.]

The Ambulatory Treatment of Hip-Joint Disease. H. A. PINGREE, Portland, Maine. *Journal of the American Medical Association*, February 8, 1908.

These authors review the different methods of the mechanical treatment of hip-joint disease, and point out that no one method embodies all the essential principles. In order to secure the requisite fixation, traction and protection without too great expense, it will be necessary to combine the features of those in common use, and turning to those analyzed, he finds that the plaster-of-Paris spica bandage affords the best fixation, the adhesive plaster straps the best traction, and the iron brace which extends beyond the sole of the boot, together with the high shoe on the opposite foot, and crutches, the best protection. The cost of this combination amounts to about $5.75 for a child of average size. Details are given for the application of this combination and the objections to its use are reviewed. The clinical results with this apparatus have been very satisfactory. About 200 patients have been under observation and their progress noted, and comparisons have been made with patients treated by the other methods. The authors' conclusions are summarized as follows: 1. The patient is under excellent control, as the apparatus cannot be removed and replaced by the patient or family at will. 2. The appliance can be produced at much less expense than any other that is efficient. 3. The duration of the treatment may be lessened, which is a factor to be thought of; there is less danger of abscess formation, and the preservation of the joint structure is more certain. 4. Finally, the position of the limb can be regulated to a nicety otherwise obtained only through the use of expensive apparatus accurately adjusted by skilled hands and kept constantly under the closest supervision.

Derangement Interne, Pulled Elbow, Groyand'sche Verletzung. J. HECKMANN, New York. *The Post-Graduate*, February, 1908.

This is a not uncommon but inadequately appreciated lesion. It occurs in children under five years of age. The usual history is this: The child is suddenly grasped by the arm or forearm to save the child from falling, to help it upstairs, etc. "The child begins to cry, and the arm, presumably paralyzed, hangs down slightly from the side, slightly flexed at the elbow, the hand in pronation, usually resting for support upon the trunk and supported and guarded by the other hand." Physical examination usually reveals nothing. If left alone, recovery takes place in from one to two weeks. Immediate recovery can, however, be obtained by quick flexion at the elbow after extension and supination of the forearm. The exact anatomical lesion is not definitely known. The author, from a study of 32 cases, believes that it is due to a subluxation of the head of the radius with or without more or less incarceration of the capsule.

On Scapular Friction (*Ueber Skapularkrachen*). DR. SOTHEISSEN, Vienna. *Medizinische Klinik*, January 12, 1908.

A mild friction obtained by moving the scapula over the chest wall is almost physiological; according to Bassompière it is found in 70 per cent. of all subjects. A loud cracking sound however is rather rare. Various causes have been ascribed for the production of scapula friction; atrophic of the serratus is an important factor. This brings about a bareness of the anterior aspect of the scapula. This etiology is especially common in the tuberculous. Among other causes may be mentioned fracture and subscapular bursitis. The author reports a case in which a very marked cracking was due to a thickening and turning over of the upper border of the scapula at the site of origin of the levator scapulæ muscle. After removal of this thickening and a plastic on the rhomboid muscle to cover the raw surface, the friction sound entirely disappeared. (No cause is given by the author for this remarkable thickening.)

Gonorrheal Exostosis of the Os Calcis. C. H. JAEGER, New York. *American Journal of Orthopedic Surgery*, January, 1908.

The author summarizes his observations on the occurrence of exostoses of the os calcis, due to gonorrheal infection, in a brief clinical study of eleven cases. Baer had previously called attention to a painful affection of one or both heels, usually occurring in males after a specific urethritis and probably caused by the lodgment of gonococci in the os calcis. In the course of a chronic urethritis or following an acute attack, the patient experiences severe pain in one or both heels. The pain may be so intense as to make walking impossible. Physical examination reveals a sensitive spot over the plantar aspect of the heel, and the x-ray picture shows a characteristic overgrowth in the form of a prong-like or cauliflower-like projection, that juts forward from the tubercle of the os calcis. In one of the author's cases, gonococci were isolated by means of culture from the bony spicules removed at operation. As regards the treatment, the thorough removal of the exostosis is recommended. This procedure was carried out in six patients with perfect recovery in every case.

A Contribution to Our Knowledge of the Typical Fracture Dislocations of the Carpus (*Beitrag zur Kenntnis der Typischen Luxationsfracture des Intercarpalgelenkes*). V. SCHOCH, Zurich. *Deutsche Zeitschrift für Chirurgie*, November, 1907.

This paper is a scholarly report based upon a study of the literature and of the author's own cases, and includes the results of experimental investigation on the cadaver. The main points of the article may be summarized as follows:

The "typical fracture of the carpus," described by de Quervain, includes a combination of fracture of the scaphoid with volar dislocation of the semilunar and of the distal fragment of the scaphoid. This typical fracture, and the simple dislocation of the semilunar and the isolated fracture of the scaphoid, are the most frequent varieties of carpal injury. It is usually caused by a fall upon the outstretched arm, the hand being held in a position of moderate dorsal flexion or with the fingers tightly clasped so that the impact is received by the thenar eminence. As regards the mechanism of this injury, two explanations may be given. According to the first, suggested by de Quervain, the rebound of the third metacarpal and os magnum is effective in fracturing the scaphoid, driving its proximal fragment and the semilunar into the volar position. The second explanation presumes that fracture of the scaphoid occurs by compressive force and that the consequent hyperextension of the hand pries forward and dislocates the semilunar and upper portion of the broken scaphoid.

The chief signs are swelling, absence of all active motion at the wrist, and shortening and widening of the carpus. Just below the volar aspect of the radius a bony prominence can be felt. Symptoms referable to compression of the median nerve may also be present. The condition may be differentiated from sprain, Colles' fracture and isolated break of the scaphoid by the abnormal position of the semilunar and fragment of the scaphoid. In the simple dislocation of the semilunar there is less shortening and there is absence of the tenderness over the scaphoid. The prognosis is bad as regards restoration of the function of the wrist except in those cases in which a complete reduction can be accomplished. Even after operative interference considerable impairment of mobility remains. In the treatment an attempt should first be made to reduce the dislocated bones, and if this is unsuccessful, an effort to accomplish this by the open method should be made; extirpation of the dislocated fragment of the scaphoid and even of the semilunar may be necessary, if the proper reduction cannot be attained.

A Plea for Early Exploratory Laparotomy in Gastric Diseases of Doubtful Nature. W. L. RODMAN, Philadelphia. *Journal of the American Medical Association*, January 18, 1908.

Rodman insists on the importance of early correct diagnosis of the pathologic conditions of the stomach and the more frequent resort to exploratory operation in doubtful cases. The risk, he says, is inconsequential and altogether out of proportion to the benefits derived. He especially emphasizes the danger of cancerous change in gastric ulcer which occurs far more frequently than was formerly believed. Few admit or realize that one-third of all cancers occur in the stomach, that 80 per cent. of gastric cancers are situated at the pylorus, and that certainly more than one-half of them have their origin in ulcer, which in its chronic form is amenable only to surgical treatment. Rodman thinks that it would be well if all the literature on gastric diseases prior to the time when the stomach fell under the domain of the surgeon, could be obliterated. While it contains much truth there is more of error in what was written before the lesions were exposed and inspected and submitted to microscopic examination. As it is now, operation is too often delayed and most gastric cancers are inoperable when they come to the surgeon. He quotes from Moynihan, Mayo, Robinson, the Mayo brothers, Jedlicka and other authorities as to the frequency of cancer from gastric ulcer and the importance of early exploratory operation, and calls particular attention to the fact that pyloric ulcers are the ones that especially undergo malignant change, those situated elsewhere rarely causing cancer. Hence the advisability of pylorectomy in these cases, preferably supplemented by a posterior gastrojejunostomy to correct existing functional disorders of the stomach. Gastroenterostomy itself is, he thinks, insufficient, though it may relieve many cases of simple ulcer. The danger of pylorectomy, he believes, has been exaggerated, and, considering its advantages, should not prevent its more frequent performance were it twice as great. Its mortality in 130 cases collected by him, has been only 6.9 per cent., while that from perforation is 13 per cent., from hemorrhage, 8 per cent., to say nothing of the indefinite but ever increasing mortality from malignancy.

Early and Late Cases of Gastric Ulcer. W. F. CHENEY. *Journal of the American Medical Association*, February 8, 1908.

Many cases of so-called chronic dyspepsia, characterized for weeks or months by flatulence, water-brash, burning and distress after food, where the epigastrium shows tenderness and the test-meal hyperacidity are in reality gastric ulcer, even when the feces show no occult blood. If, in such cases, a month's ordinary treatment for the condition does not cause improvement, Cheney has learned to insist on a rigid course directed to the cure of ulcer, even though no positive evidence of its presence has yet appeared. Cheney reports several cases and gives his conclusions, not from these merely but from his experience with the groups they represent, substantially as follows: 1. There is an early stage of gastric ulcer, lasting for weeks or months, during which rigid medical treatment can effect a cure; but its clinical picture does not correspond to the classical one and the diagnosis at the time must be inferred rather than positively demonstrated. 2. In the later stage, commonly described as gastric ulcer, the symptoms are really due to complications rather than to the original disease: (*a*) to perigastric adhesions; (*b*) to pyloric stenosis; (*c*) to gastric dilatation and retention; (*d*) to localized peritonitis; (*e*) to the opening of a large bloodvessel; (*f*) to perforation of the stomach wall; complications beyond medical treatment and falling into the surgeon's domain.

Diagnosis and Treatment of Diaphragmatic Hernia (*Diagnostic et Traitement de la Hernie Diaphragmatique*). DANIEL J. CRANWELL, Buenos-Ayres. *Revue de Chirurgie*, January 10, 1908.

The author gives a comprehensive analysis of the reported cases of chronic diaphragmatic hernia, recounts at length the history of his own case and makes a plea for the transpleural method of operating in this condition. His patient had received a deep gash in the left side of the thorax about 18 months previously. Although the wound had healed kindly, certain characteristic symptoms ensued. These were pain, a peculiar sensation of a "noise or rumbling" in the chest, a feeling as if something were ascending from the abdomen into the thorax upon deep inspiration, or upon coughing. The diagnosis of chronic traumatic diaphragmatic hernia was made. Upon opening the chest at the operation, the transverse colon and omentum were found prolapsed; reduction was easy, the diaphragm

was sutured and the patient made an uneventful recovery.

Etiologically we may distinguish two varieties of this type of hernia, one produced by wounds, the other by rupture of the diaphragm. A sudden augmentation of the intra-abdominal pressure by compression of the viscera has been known to cause a tear in the phrenic vault. Frequently the establishment of the prolapse is attended by no symptoms at all, or if present these may be insignificant; in fact, the first clue to the pathological condition may be furnished by the signs of strangulation of displaced gut. Besides the pain and the peculiar sensations cited as occurring in the author's case, disturbances referable to the digestive tract are usually present. These are a sensation of fulness in the epigastrium, impairment of digestion, vomiting, and constipation which may go on to obstruction. Sometimes there is dyspnea, and even palpitation. By palpation of the thorax, a fremitus, communicated to the chest well from the intestines, may be elicited, and, if felt, is important in diagnosis. Examination with the Roentgen rays often gives valuable information.

The transpleural method is to be preferred in the operative treatment for the following reasons: First, because adhesions can be attacked best and reduction is done under the guidance of the eye; second, because the diaphragm is more accessible by this route; third, because in attempting reduction by way of the abdomen, the negative pressure of the thoracic cavity must be overcome; and fourth, because the dangers of pneumothorax are illusory, the lung being usually adherent in the chronic cases, and furthermore already accustomed to the compressive action of the displaced viscera.

The Treatment of Perigastric Adhesions with Fibrolysin (*Zur Fibrolysinbehandlung perigastritischer Verwachsungen*). C. MICHAEL, Berlin. *Berliner Klinische Wochenschrift*, December 16, 1907.

The author reports two cases of perigastric adhesions (in one case the diagnosis was confirmed by operation) that had resisted all other methods of treatment, but in which complete relief of all symptoms was obtained by the injection of fibrolysin. Fibrolysin is a solution of thiosinamin, in glycerin and water. The injections of 1.15 c.c.m. of the solution are given subcutaneously in the epigastric region every other day. One case required ten, the second eighteen injections, before relief was obtained. Both cases remained well after six months' observation.

Phlegmonous Sigmoiditis — Resection — Recovery. I. OLMSTED, Hamilton, Canada. *American Journal of Obstetrics*, February, 1908.

The author reports an acute case, which differs from the cases reported by Mayo, in that no diverticula were found. The patient, a young woman of 24, had severe cramp-like pains in the lower abdomen, rectal tenseness and complete constipation. She frequently passed small quantities of bloody serum, but no gas flatus. The condition persisted for 6 days, not accompanied by marked distension or vomiting. The temperature did not rise above 99.5°, the pulse above 90. On opening the abdomen five inches of the sigmoid were found, dusky red, contracted and with infiltration of the mesosigmoid; there was no peritonitis. The affected part of the bowel was resected, and at a second operation, one month later, an end-to-end anastomosis was performed. Recovery was uneventful. The specimen showed the lumen completely obstructed by the inflammation, with exudation into all the coats. Culture showed a streptococcus and the colon bacillus.

The Results of the Operative Treatment of Chronic Constipation. W. ARBUTHNOT LANE, London. *British Medical Journal*, January 18, 1908.

Chronic Constipation. A Consideration of Its Surgical Treatment. W. ARBUTHNOT LANE, London. *Surgery, Gynecology and Obstetrics*, February, 1908.

Lane describes as a symtom-complex a chronic intestinal stasis marked either by constipation alone or at times alternating with mucous colitis. The stasis and lack of drainage first produce a distension of the cecum which drags downward into the pelvis and later forms adhesions along its outer surface. The peripheral end of the appendix becomes fixed and its distal end dilated because of kinking. The ascending colon also becomes fixed at the hepatic flexure by the contracting normal attachments and by newly formed adhesions. As the transverse colon is firmly fixed by its two flexures the median portion alone can sag and often reaches into Douglas' cul-de-sac. The descending colon is affected similarly to the ascending portion while the sigmoid may either dilate, or as its mesentery shrinks, become short, thin and almost non-contractile. All these parts of the large bowel show a great tendency to contract adhesions. The stomach is pulled upon by the transverse colon, becomes dilated and also contracts adhesions. In advanced cases the small bowel shows numerous adhesions, a shortened mesentery, thin, flaccid, transparent walls and a greatly decreased muscular function. To complete the vicious circle the kidneys, especially the right, are drawn upon by the adhesions running to the colic flexures and become displaced and mobile.

The auto-intoxication resulting from the stasis manifests itself in rapid loss of fat, and degeneration of the muscles. The skin is thin, inelastic, dirty looking. A marked tendency to pigmentation is noted. The resisting power is greatly reduced and the victim becomes a ready victim to tuberculosis, rheumatoid arthritis, gout, etc. In advanced stages the skin has a peculiar objectionable odor. Lane ascribes the trouble largely to the prolonged erect or sedentary position necessitated by civilization. In primitive communities the squatting and recumbent posture is more common. Reclining or even the Trendelenburg posture tends to relieve the descent and angulation of the large bowel. Pain over the cecum, loin, sacrum and in the upper abdomen are all accounted for by the points at which the traction takes place. The beginning of the trouble is often during the indigestion of infancy.

The author in all cases of severer type advocates liberation from adhesion and complete extirpation of the large bowel as far as the rectum. He then performs an ileo-sigmoid anastomosis. Where the small bowel shows many kinks and adhesions an additional entero-enterostomy may be indicated. Should the dilated stomach not be relieved by the first operation a gastroenterostomy may be performed later. Finally the mobile kidneys may demand nephropexy. Early rather than delayed operation is indicated. The author reports 39 cases, of which 8 died. The results in the cases that recovered were without exception excellent.

[Such a formidable operation is not apt to become popular in a condition that we have always been led to believe could be cured, or at all events, greatly relieved, by appropriate medical treatment.]

Some Physiological Aspects of Gastro-Enterostomy. H. C. CAMERON, London. *British Medical Journal*, January 18, 1908.

As a result of careful physiological and chemical experiments on human beings, the author arrives at the following conclusions:

1. On a purely milk diet, in non-malignant cases, after gastrojejunostomy there is a slight but definite diminution in the power of digesting and absorbing fat.

2. On a mixed diet, rich in fat, for the most part in the form of butter, this diminution in power disappears.

3. On a milk diet and on a mixed diet, rich in fat, the results are the same, whether there is obstruction at the pylorus or not. It is therefore improbable that the diminution in power of digesting milk depends upon whether the duodenum is or is not short-circuited out of the alimentary canal. The cause must be common to both obstructed and non-obstructed cases, and is probably to be found in the regurgitation of alkaline bile and pancreatic juice into the stomach and in the consequent reduction of gastric acidity, together with the inhibition of the rennin.

4. That in cases of recurrent intractable duodenal or gastric ulceration, an operation is indicated which will ensure the complete loss of the acid reaction of the stomach, while the benefit at present conferred in ulceration by gastro-enterostomy is due to the partial loss of that reaction. That such an operation would consist in closing the proximal end of the bowel and implanting the distal directly into the stomach. That where gastro-enterostomy is performed the opening should be near the cardiac end

of the stomach, and that the anastomosis should be simple, not Y-shaped, nor with entero-enterostomy.

5. That the complete digestion of fats on a mixed diet is due to the specific stimulating effect on the pancreas of a hormone produced by the fats themselves.

6. A case of malignant pyloric obstruction, after partial gastrectomy and posterior gastro-jejunostomy, showed complete power of dealing with fats.

Rupture of the Kidney, with Remarks Upon Conservative Operative Treatment. J. R. NEILSON, Philadelphia. *American Journal of the Medical Sciences,* January, 1908.

Neilson reports four cases of rupture of the kidney in all of which the hemorrhage was easily controlled by simple gauze packing. All recovered with the exception of one, who died of secondary hemorrhage nearly two weeks after the operation. Of 34 cases reported within recent years, statistics show that 11 treated by gauze packing, suture of the kidney or drainage, 2 died; a mortality of 18.1 per cent.; 23 cases treated by nephrectomy give a mortality of 30 per cent. The author, therefore, concludes that wherever possible, nephrectomy for rupture should not be performed unless the kidney is pulpified, separated in part or in toto from its main blood supply, or has been previously diseased.

The Etiology of Puerperal Retroflexion of the Uterus (*Zur Aetiologie der Retroflexio uteri puerperalis*). R. OLSHAUSEN, Berlin. *Zentralblatt für Gynäkologie,* January 4, 1908.

Retroflexion following the puerperium is always due to the condition occurring after the first pregnancy, although it may recur after succeeding labors. The mechanism seems to be the great thinning of the cervix, produced by the fetal head, which for weeks before labor may descend low into the pelvis, and by the still greater thinning of the cervix which is due to the contraction necessary to overcome the narrow and often unyielding vagina. The anterior part of the cervix is thinned out more than the posterior; this should favor post-partum anteflexion, but probably the dorsal decutitis during the puerperium and the overdistension of the bladder serve to change the position into retroflexion. Olshausen does not agree with Küstner that uncomplicated puerperal retroflexion produces pelvic peritonitis; the inflammation being due to infective causes.

It is absolutely essential to examine every woman 4-5 weeks post-partum to look for a retroflexion. If this false position is found, the uterus should be replaced and retained with a pessary. A cure usually results in a few weeks. Pelvic massage, on the other hand, although frequently used at present, never effects a cure.

A Contribution to the Etiology of Leucorrhea (*Zur Pathogenese des Fluor Albus*). E. NETER, Mannheim. *Muenchener Medizinische Wochenschrift,* January, 1908.

The patient was 3½ years old, of a family in good circumstances. For one year constant profuse leucorrhea was noted followed by intertrigo. Local treatment was never able to relieve the discharge for more than one to two weeks. There was severe and obstinate constipation. The author found the child healthy and otherwise normal; no gonococci or tubercle bacilli in the discharge; masturbation and worms could be positively excluded. By regulating the diet so as to overcome the constipation, the discharge rapidly disappeared, followed by disappearance of intertrigo. Twice during the course of the following year, when the diet was neglected, and consequently the constipation recurred, leucorrhea developed again, but it promptly disappeared when the intestinal function was properly reestablished. Neter believes that the pelvic congestion incident to constipation caused the discharge.

Vesico-Uterine Fistula. W. H. W. KNIPE, New York. *American Journal of Obstetrics,* February, 1908.

A primipara with flat pelvis, conjugate 9.5-10 cm., had a tedious labor. Forceps were applied after full dilatation with the head at the ischiac spines, and delivery of a live child effected by tractions lasting 1½ to 2 hours. A few hours after delivery urine was found escaping from the vagina. The author saw her 24 hours post-partum. A hole nearly 3 inches in length was found extending from the internal os upward directly into the bladder. Because of the large size of the opening immediate operation, by Follet's method, was performed. A transverse incision above the vaginal part of the cervix was made, the bladder separated from the uterus and the bladder defect closed by interrupted chronic gut sutures. The uterine wound was closed by continuous suture, and a small drain left to the bladder wound. No denudation or freshening of the edges was necessary, as the margins were fresh and not contused. Catheter drainage of bladder for three days. Primary union.

Adenomyoma of the Uterus. T. S. CULLEN, Baltimore. *Journal of the American Medical Association,* January 11, 1908.

Cullen gives the results of an elaborate study of these growths, which he finds surprisingly frequent, having found them in over 5 per cent. of between 1,300 and 1,400 cases of myoma. Their pathologic anatomy is described by him in detail; there is first a diffuse myomatous thickening of the inner muscular walls accompanied by a downgrowth of the normal mucosa into this diffuse growth. Portions of this adenomyoma may become subperitoneal or intra-ligamentary and may form a large cystic adenomyoma. Portions of the diffuse growth may also project into the uterine cavity, forming submucous adenomyomata. The growth may also occur exceptionally in the cervix with like extension of the uterine glandular structure. No proofs of any causal relation between the ovaries and tubes and the development of adenomyoma could be found. The disease is most common between the ages of 30 and 60, is found in both single and married women and does not seem to militate in any way against normal pregnancy. The diagnosis is difficult and impossible in subperitoneal and subligamentary cases until the abdomen is opened. If a diagnosis can be made, abdominal hysterectomy is indicated. While Cullen considers these growths themselves to be benign, the coexistence with them of a squamous carcinoma is not rare, and they may themselves develop into adenocarcinoma. In the vast majority of cases, the gland elements are derivatives from the uterine mucosa, though the continuity may sometimes not be traceable. The author's summary is given substantially as follows: In the examination of 50 uncomplicated diffuse adenomyomata of the uterus the mucous membrane origin of the glands could be traced in every case. In 6 additional cases with complicating squamous-cell carcinoma, the continuity was established in 5. In the 2 remaining cases of adenomyoma of the body the continuity was destroyed by adenocarcinoma. In the remaining 15 cases of subperitoneal or submucous adenomyomata one would naturally not expect to trace the relationship; nevertheless, in one case the mucosa literally flowed into the myoma. Thus, taking all kinds together, Cullen was able in 56 out of 73 cases to trace the origin of the gland element to the uterine mucosa. All adenomyomata of the uterus in which the gland elements are similar to those of the uterine mucosa, and surrounded by stroma characteristic of that surrounding the normal uterine glands, owe their glandular origin to the uterine mucosa or to Müller's duct, no matter whether they be interstitial, subperitoneal or intraligamentary, solid or cystic.

Fulminating Pelvic-Abdominal Edema Simulating Ruptured Tubal Pregnancy. W. A. BRIGGS, Sacramento. *Journal of the American Medical Association,* February 15, 1908.

Two cases are reported, one of them fatal, in which the symptoms justified the diagnosis of ruptured tubal pregnancy, but which proved to be on operation, cases of fulminant edema of the pelvic connective tissue. He has been able to find but two similar cases in medical literature (those of Jocet and Legueu), which he reproduces. His conclusions are given as follows: 1. Fulminating pelvic edema may very closely simulate ruptured tubal pregnancy. 2. Absence of subjective and objective signs of pregnancy, of irregular uterine hemorrhage, of decidua in the flow in cases of shock with severe pelvic pain, would suggest the possibility of fulminating pelvic edema. 3. A hemoglobin

test might assist in the differential diagnosis. 4. Fulminating pelvic edema is probably angioneurotic in origin. 5. Death (as in Case 2) may result from acute pelvic-abdominal edema. In both his cases, there was a mild inflammatory condition—in the non-fatal case producing agglutination of the peritoneum and roofing in the pelvis, and in the other confined to the right adnexa. The second patient was decidedly neurotic.

Aspiration Drainage in the Treatment of Empyema. W. S. SCHLEY, New York. *American Journal of the Medical Sciences,* January, 1908.

The author reports eight cases of empyema in which an ambulatory method of aspiration drainage devised by him was tried. He believes that the better expansion of the lung shortens the duration of convalescence appreciably and lessens the possibility of formation of chronic sinuses. The method is the following: After resection of from ¾ inch to an inch of rib a number 35 to 40 French tube is inserted for a distance of between 2½ to 3 inches. The tube is packed around with iodoformized gauze or absorbent cotton saturated with boric acid ointment. A piece of rubber dam about four inches square, with a hole cut in it, is stretched over the tube and fastened to the chest wall with strips of adhesive plaster. A circular wad of absorbent cotton is placed around the tube and a chest binder is applied through which the tube is made to pass. A Palitzer bag is attached with the aid of a glass tube and smaller tube. The patient is allowed to get out of bed, the bag lying somewhere beneath the clothes. The wound is dressed about once a week and the tube shortened as the sinus grows shallower, until it can be removed entirely. The aspiration drainage is applied within a few days after the operation.

Schlosser's Alcohol Injections for Facial Neuralgia. Sixteen months' experience with 55 cases. Three failures. O. KILIANI, New York. *Medical Record,* January 18, 1908.

As is well known, the Shlösser method consists in the injection of 80 per cent. alcohol directly into the affected branches of the trigeminal nerve. The injections are first made peripherally; if relief is not obtained in this way, the injection is made directly into the affected branch as it leaves the skull or into the Gasserian ganglion proper. The number of injections necessary before relief is obtained varies from two to six. The time required varied from three to five weeks.

[Of the three reported failures only one appears from the histories outlined to be truly valid. Recurrences by this method are said to occur after an interval of from eight to sixteen months.]

Thus far the author has been able to report only two recurrences, at an interval of nine and eleven months respectively.

The Radical Operation for Suppurations of the Antrum of Highmore by the Nasal Route (*Die Radikaloperation der Kieferhöhlen Eiterungen von der Nase her*). L. RÉTHI, Vienna. *Wiener Klinische Wochenschrift,* January 30, 1908.

The author summarizes his method of treatment of antral suppurations somewhat as follows: An attempt is first made to treat the antrum by means of irrigations through the normal ostium. If the teeth are carious these are removed and the antrum is treated through the opening in the alveolar process. If there is no improvement at the end of a few weeks after either of these methods, a large communication is made (under local anesthesia) between the antrum and the middle and lower tarbinate fossae of the nose. All necessary manipulations can then be easily practiced through this opening. The author does not believe in merely making a small opening, because he has found such to be insufficient.

Adenectomy During Acute Middle Ear Disease. P. D. KERRISON, New York. *Archives of Pediatrics,* January, 1908.

Kerrison believes that removal of the adenoids is justified during the course of an acute otitis media if the adenoids are of such a size and in such a situation as to interfere with the proper recovery of the otitic inflammation. The author therefore advocates, in such cases, adenectomy and paracentesis at the same sitting.

Indications for Operative Interference in Cerebral Complications Due to Chronic Suppuration of the Middle Ear. C. F. WELTY, San Francisco. *Journal of the American Medical Association,* February 8, 1908.

Early operation in the cerebral complications of ear disease should be considered conservative surgery. Occasionally an unnecessary operation will be performed, but the mortality will be greatly diminished and the good done will far overbalance the added risk. He quotes Jansen's findings as showing the advantages of early intervention, in the absence of meningeal complications and small number of cerebral abscesses in his cases. His conclusion as regards the radical mastoid operation is that every indication for operation should be strictly complied with and that a chronic discharge from the ear without any other symptoms should be considered an indication for operation if the condition remains uncured after a treatment of six or eight weeks. The accidental mortality of the interval operation is about 0.5 per cent., while 17 per cent. or more of patients with chronic ear discharge not operated on die of cerebral complications. Extradural abscess is the most frequent complication, and the most important, as being the precursor of 90 per cent. of the other cerebral complications. This seldom can be diagnosed absolutely, but among positive indications for the operation, Welty mentions the rapid appearance and disappearance of threatening symptoms, especially following the discharge of large quantities of pus and a subsidence of the symptoms, particularly when the discharge is greater than can be allotted to the middle ear; also when, after a radical operation for chronic discharge, dizziness and headache, the latter recurs three weeks after operation and pus is discovered by a pneumatic speculum. He uses Jansen's small hook-like instrument in searching for extradural abscess and believes it has been responsible for finding many that would otherwise have been overlooked. Intradural abscess is rare and its diagnosis almost impossible. He would class diffuse purulent meningitis as fourth in frequency of the cerebral complications of middle-ear suppuration. He thinks that serous meningitis is frequent, and that all patients who develop cerebral symptoms following operation and recover without cerebral operation should be so classed. The absence of bacterial infection makes the prognosis more favorable. Cerebral abscess ranks third among the cerebral affections from chronic ear suppuration, and its various symptoms and indications are reviewed by Welty. He calls attention to the diagnostic value of fistulous openings connected with the diseased bone, found by Körner in 42 per cent. of his cases, and which should be searched for carefully, as they clear up the diagnosis wonderfully. In cerebellar abscess the indications are less clear and depend largely on the pathologic condition present at the first operation. Sinus thrombosis is second in frequency among the cerebral complications of ear disease and seems to be attended with fewer difficulties of diagnosis than the others. The classic operative indications are high fever accompanied by remissions to near the normal temperature or below it, and usually accompanied by chills and sweats. These symptoms always call for operation, but if the patient does not do well and symptoms suggest sinus involvement, he would not wait for the full classical syndrome, but would consider it conservative treatment to operate at once. He would not trust the needle alone for the diagnosis, as the case that is difficult to diagnose is probably a partial thrombosis and fluid blood will be found in the syringe. Optic neuritis is common in thrombosis. Jansen found 50 per cent. and in the Boston Ear Infirmary 30 per cent. was reported. Hemorrhage from the middle ear due to perforation of the carotid artery is very rare. It may be diagnosed by compression of the common carotid causing cessation of the bleeding. All the reported cases have been fatal. Welty suggests in this case tying the internal carotid as it leaves the petrous portion of the temporal bone, and the common carotid lower down, taking care of the small anastomotic branches by the tampon. He has not heard of this being advised, but suggests it on anatomic grounds.